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An Address
ON
SOME PROBLEMS CONNECTED WITH BENIGN ENLARGEMENT OF THE PROSTATE.*

BY
C. A. R. NITCH, M.S., F.R.C.S.,
SURGEON TO ST. THOMAS'S HOSPITAL, LONDON.

THERE are many problems connected with benign enlargement of the prostate which provide material for serious thought and discussion. Some of these problems have not yet been solved satisfactorily, and others are treated in different ways by many of the workers in this field of surgery.

Some writers still employ the term "hypertrophy," but this is incorrect, for hypertrophy of an organ implies an increase in size of all its component parts, whereas in the pathological prostate the enlargement is essentially glandular. It is now generally agreed that the condition, which for want of a better name is usually called "enlargement of the prostate," is due to an adenomatous formation, but the actual origin of the adenomata is as yet unsettled.

Before discussing the theories which have been advanced to account for these pathological changes, a brief reference to the anatomy and histology of the normal prostate is essential.

The gland is traversed by three canals, the urethra and the two common ejaculatory ducts, by which it is arbitrarily divided into five lobes, an anterior lobe in front of the urethra, two lateral lobes surrounding the urethra above the ejaculatory ducts, a posterior lobe below the ejaculatory ducts, and a so-called middle lobe between the upper part of the two lateral lobes. This arrangement is useful for descriptive purposes, but has no real anatomical basis, for the tissues composing the lobes are continuous with each other and quite inseparable.

The stroma of the prostate is formed of a felt-like mass of unstriped muscle, fibrous, and elastic tissue containing plicated tubular glands in its meshes. The portion immediately in front of the urethra, called the anterior commissure, is usually devoid of glandular elements, thus accounting for the absence of adenomatous tissue in this situation in the ordinary type of prostatic enlargement. When glandular tissue is present it may undergo pathological changes together with the rest of the gland, giving rise to annular enlargement, or rarely the change may be confined solely to it.

Beneath the mucous membrane of the trigone and the posterior urethra are four groups of glands which are quite separate and distinct from those of the prostate. Collectively they are called the submucous or accessory prostatic glands. One group lies beneath the trigone; a second around the internal meatus; the third and most important, distinctively named the periurethral or subcervical glands of Albarran, is situated in the submucous tissue of the prostatic urethra. This group consists of thirty or more branched tubules which open into the floor of the urethra between the neck of the bladder and the verumontanum. The fourth group is in the anterior wall of the urethra.

Of the many theories which have been suggested to explain this disease two only are worthy of consideration—the degenerative and the neoplastic.

The degenerative theory is based on the resemblance of the changes in the prostate to those in the female breast at the menopause. The microscopical appearance of the enlarged prostate is so similar to that of chronic lobular mastitis that frequently prostatic can only be distinguished from mammary tissue by its characteristic corpora amylacea. The similarity is so great that Henry Wade considers the disease should be called "chronic lobular prostatitis"; he attributes the change to alteration in a normal internal secretion associated with normal diminution of sexual activity.

The neoplastic theory is the one now more generally held, but even if this be the correct explanation the underlying cause of the adenomatous formation may still be due to a degenerative process.

There are two views regarding the origin of the adenomata; one is that they are true tumours of the prostate gland itself, and that their capsule is formed by the compressed but unaffected remains of the gland, analagous to an adenoma of the thyroid. The other view, held by many Continental writers, is that the adenomata arise in the periurethral glands, and that the prostate takes no part in their formation, but undergoes atrophy and compression as the tumours enlarge. The latter theory can account for the well-known freedom from adenomatous formation of the prostatic tissue below the ejaculatory ducts, since the periurethral glands do not extend below the verumontanum.

In this connexion it is an interesting fact that, owing to the escape of the posterior lobe, the verumontanum is seldom seen in the tumour removed by the suprapubic operation; its presence in an operation specimen would signify involvement of the prostatic tissue below the ejaculatory ducts, and consequent destruction of these ducts by its removal. Tumour formation in the accessory glands can also account for the pedunculated adenoma, the so-called middle lobe, overhanging the internal meatus, and also for the occasional small adenoma in the posterior wall of the prostatic urethra just below the internal meatus, which is sometimes, though rarely, the sole cause of obstruction.

Some writers, notably Motz and Péréarnau,[1] Papin and Verliac,[2] and Lendorf,[3] consider that the adenomatous change is limited solely to the periurethral glands, and that the prostate takes no part in its formation but is compressed and atrophied by the new growth. It is difficult to reconcile such a view with the naked-eye appearance of many enlarged prostates in the early stage which show adenomatous masses scattered irregularly throughout the lateral lobes at a considerable distance from the anatomical position of the periurethral glands.

And, again, the theory of a periurethral origin is untenable in the rare cases in which, after removal of an enlarged prostate, a second re-forms, identical with its predecessor in every respect, and as easily enucleable. Since all the periurethral glands must have been removed at the first operation the second growth can only have arisen from prostatic tissue surrounding the original adenomata.

In all probability both views are more or less correct, since in many cases the adenomatous change involves both the prostatic and the periurethral glands, but the practical application of these views is of importance to both patient and operator. If the adenomata are considered to be of prostatic origin then, after enucleation, all remaining portions of the prostate should be removed to prevent recurrence; but if, on the other hand, the change is thought to be limited solely to the periurethral glands, there is no necessity to remove any portions of prostatic tissue remaining in the wall of the cavity, and consequently the patient is saved the shock of a prolonged operation.

When the etiology of the disease is settled the correct surgical procedure will follow naturally, but until then it seems best to be content with the Freyer operation if, after digital enucleation of the tumour, the walls of the prostatic cavity are quite smooth; but if the walls are uneven, and contain irregular masses of small adenomata, an open operation should be performed and as much of the prostatic tissue removed as possible.

Since it is now universally agreed that, whenever possible, "prostatectomy" is the best treatment for benign enlargement of the prostate causing symptoms, the problems connected with it fall naturally into three groups: pre-operative, operative, and post-operative. It will only be possible to discuss some of these, but before doing so I will consider the cases which are clearly unsuitable for prostatectomy.

INOPERABLE CASES.

In general they belong to the class that constitutes bad surgical risks, no matter what the operation, and are those with advanced senile changes, gross arterio-sclerosis, pronounced chronic nephritis, organic disease of the heart or nervous system, diabetes, and obesity. Some of these

* Delivered before the Oxford Medical Society, November 9th, 1928.

conditions, such as glycosuria and obesity, can be improved so greatly by appropriate treatment that they cease to be serious operative risks, but on the whole the "prostatic" with these added complications is better treated by other means. Of these diathermy and deep *x*-ray therapy are at present under trial, but the results are uncertain.

Diathermy is applied by means of a special metal electrode, containing a thermometer, which is passed into the rectum and pressed against the prostate. The current is started, and slowly increased until the initial sensation of heat becomes one of discomfort; it is then reduced until the discomfort subsides, and is kept at this strength for twenty minutes. At this stage the temperature of the electrode will be about 111° F., but the temperature of the prostate will probably not be above 107° F. The treatment is repeated every few days, with gradually increasing intervals.

Deep x-ray therapy has been tried frequently, with results sometimes brilliant but more often disappointing; still, these methods are well worth a trial before the patient is condemned to a catheter life. If for any reason diathermy or deep *x* rays cannot be employed, or if they have been tried and failed, the only two possible procedures are permanent suprapubic drainage or the regular use of a catheter.

Catheterization is indicated when the patient is either very old or is obviously going downhill; when he is sufficiently intelligent to keep and use the catheter aseptically, or sufficiently well off to have it done for him; when permanent suprapubic drainage is advised and refused; and when nocturnal frequency is due to a large amount of residual urine. Apart from severe cystitis, nocturnal frequency is the complication which troubles the patient most, for his nights are so disturbed that he gradually becomes worn out from loss of sleep. Contrary to expectation it is not always dependent upon the quantity of residual urine, for some patients with a healthy bladder and a 6 oz. residuum may only be disturbed twice in the night, while others with only 2 oz. may have to urinate as often as six times. When nocturnal frequency is associated with less than 4 oz. of residual urine it is due either to cystitis, to highly acid urine, or to irritability of the bladder, and can be relieved by appropriate remedies; but when it is due to 6 or more ounces it can be greatly diminished by catheterization at bedtime, provided the patient abstains from drinking after 8 p.m.

Permanent suprapubic drainage is required when catheterization cannot be tolerated, or when it is difficult or impossible owing to the size and shape of the prostate; when it either causes haemorrhage or there are repeated severe haemorrhages unconnected with catheterization; when the patient suffers from relapsing subacute cystitis or from toxaemia due to chronic cystitis; and when nocturnal frequency is not relieved by catheterization. It is impossible to lay down any hard-and-fast rule, for each case must be judged on its merits and on the home conditions of the patient, but, speaking generally, in cases that are clearly inoperable catheterization should be given a trial whenever possible, for on the whole it causes less mental disturbance and less physical disability than the suprapubic tube. The cystitis that is the inevitable sequel of regular catheterization, no matter how carefully it is carried out, seems to cause very little discomfort; if it becomes troublesome permanent suprapubic drainage must be established.

The catheter should be passed about four times in the twenty-four hours when retention is complete: in the morning and at night when the amount of residual urine is about 10 oz.; and at bedtime only when the residual urine does not exceed 6 oz.

PRE-OPERATIVE PROBLEMS.

Age.

Enlargement of the prostate generally commences between the ages of 50 and 60, but the patient takes little notice of the early symptoms, regarding them as a necessary accompaniment of advancing years, and usually only seeks advice after the age of 60. By then the signs and symptoms are quite definite and an operation is clearly indicated. But if the case is seen when both enlargement and symptoms are slight, the question arises whether an immediate prostatectomy should be advised.

Provided the residual urine is not above 1½ oz., an operation at this stage is, in my opinion, unnecessary, for two reasons: first, in a certain proportion of cases the condition remains stationary for many years; and secondly, the operation may be very difficult, for in the early stages the line of cleavage between the adenomatous tissue and its prostatic capsule may be so ill defined that digital enucleation is impossible. The surgeon is then obliged to dissect away the affected tissues with scissors and forceps, an operation which requires considerable skill and experience. Therefore if a patient is seen in the early stage he should be watched carefully, and examined every six months for residual urine and renal efficiency, and operated on as soon as these indicate the onset of prostatic obstruction. In these early cases residual urine is the best sign of obstruction, and my rule is to operate when it amounts to more than 1½ oz.

Advanced age is no great bar to operation, provided the patient is otherwise healthy; the octogenarian often gives less anxiety than the man of 60, for he has only attained his years by the help of a sound constitution, and therefore his condition and resistance are relatively equal to those of the younger man. In my experience the most dangerous age is between 65 and 75, for by then obstructive symptoms have been present for some years, and the patient's kidneys have been so damaged by back pressure, and possibly by sepsis as well, that an operation may easily prove fatal.

It therefore follows that the optimum age for the operation depends entirely on the symptoms and not on the size of the gland. The approximately young man, with symptoms of prostatic obstruction without pronounced enlargement of the gland, is in as great need of surgical activity as the old man, with a large prostate causing practically no symptoms, is in need of masterly inactivity.

The Condition of the Patient.

Recovery after prostatectomy depends mainly on two factors—the renal function and the resistance to sepsis. Therefore before an operation is performed the renal function must be estimated very carefully both clinically and chemically. The clinical signs of a defective renal function are of the greatest importance and are often more valuable than chemical tests. The chief clinical signs of a defective renal function are a dry tongue, increased thirst, a sallow complexion, a poor appetite, and a distaste for meat. If, in addition, there is polyuria or oliguria the picture is complete.

The most reliable chemical tests are (1) the blood urea, and (2) the urea concentration test. In cases of enlarged prostate the blood urea test is the best, for the urea concentration test is apt to give a false impression by being on the low side if there is much residual urine. This can be overcome by collecting the urine with an indwelling catheter during the test, but the catheter may act as an irritant and so influence adversely the action of the kidneys.

In a healthy man on an ordinary diet the blood urea should range between 25 and 50 mg. per 100 c.cm. of blood according to age, and the urea concentration in the urine after a dose of 15 grams of urea in 100 c.cm. of water given on an empty stomach should rise from 2 per cent. in the second hour to 3 per cent. or over in the third hour. The value of the urea concentration test lies not so much in the actual quantity of urea excreted by the kidney as in the ability of the kidney to increase the concentration in each hour, and so give an indication of its capacity under a strain. Thus kidneys that yield, say, 1.9 per cent. in each of the three hours are not so efficient as kidneys that excrete 1.7 per cent., 1.8 per cent., and 1.9 per cent. in consecutive hours. In such a complicated structure as the human body chemical tests and clinical signs are often deceptive, but when both are taken in conjunction they give the most reliable indication that we have at present of the functional capacity of the kidneys.

Is it possible to fix a minimum limit to the urea concentration and a maximum limit to the blood urea beyond

either of which prostatectomy would endanger the life of the patient? In a previous communication[4] on this subject I gave the following answers, to which I still adhere.

"In my opinion the limits are a urea concentration of not less than 1.7 in the third hour, and not more than 50 mg. of urea in 100 c.cm. of blood, always provided that the clinical condition is satisfactory. When the clinical signs of a defective renal function are definite no chemical test should influence the surgeon in favour of an operation; and, conversely, if the clinical condition is a good one and the chemical tests are not too far below standard, he need not hesitate to operate."

In employing these tests as indications for or against prostatectomy the condition of the patient at the time they are made must be taken into consideration. When complete retention supervenes on long-standing obstruction the renal function will be greatly depressed, and, therefore, the tests will not indicate the real capacity of the kidney; but if they are made some days after the retention has been relieved and the general condition of the patient has improved they will be comparatively reliable.

The following two examples point to the importance of taking both clinical and chemical evidence into consideration.

1. A man, aged 65, with marked clinical and chemical signs of a defective renal function from long-standing prostatic obstruction, underwent suprapubic drainage for acute retention. Three months later the clinical picture was that of a man in moderate health but with a sallow complexion. The blood urea was 79 mg. per 100 c.cm. and the urea concentration did not rise above 1.5 per cent. in the third hour. At the end of another three months the results of the chemical tests were unchanged. Operation was therefore contraindicated. Six months later, after a brief illness, he died of uraemia.

2. A thin man, aged 56, looking very ill, had pyelocystitis, thick foul urine, and complete prostatic obstruction of six months' duration, necessitating regular catheterization. The blood urea was 40 mg. The urea concentration was 1.4 per cent., 1.65 per cent., and 1.6 per cent. in the three hours. Suprapubic drainage was performed and there was improvement with bladder lavage and vaccine treatment. Two months later the tongue was moist and clean, there was no thirst, a good healthy appetite was present, and the patient had gained 1 st. in weight. The blood urea was 46 mg. and the urea concentration 0.55 per cent., 1.25 per cent., and 1.5 per cent. in the three hours. The concentration was very low, but a steady rise indicated a kidney capable of withstanding a strain. The blood urea was normal for the age, and the clinical signs were excellent. Prostatectomy was followed by uneventful recovery and departure from hospital in six weeks. Three years later the patient was alive and well.

The first case was only a fair risk clinically and a bad one chemically, while the second was a good risk clinically and a poor one chemically. Experience has shown that life will be seriously endangered by prostatectomy if the blood urea is much over 50 mg. per 100 c.cm. of blood and the urea concentration below 1.5 per cent. in the second or third hour.

Since clinicians and biochemists have co-operated in gauging the renal function, deaths from uraemia after prostatectomy seldom occur, and, excluding pulmonary embolism, which is an ever-present danger, the greatest post-operative danger nowadays is sepsis in the form of suppurative pyelonephritis. MacAdam and Shiskin[5] have pointed out that the cholesterol content of the blood gives a fair indication of the power of resistance to sepsis, and that patients with a high blood urea and a normal blood cholesterol all recovered from prostatectomy, whereas nearly all those with a high blood urea and a low blood cholesterol died. The normal cholesterol content ranges between 0.13 per cent. and 0.19 per cent.; when it is below 0.13 the resistance to sepsis may be considered so low as to constitute a bad operative risk.

When there is no immediate urgency the dangers of post-operative sepsis can be diminished very greatly by a course of preliminary treatment. The mouth and teeth should be inspected and treated by a dentist if necessary. Moderate infection of the bladder should be treated by diuresis, urinary antiseptics, and lavage. In many cases three or four doses of an autogenous vaccine at intervals of five days will increase the patient's resistance to sepsis. When cystitis is severe the bladder must be drained suprapubically and irrigated continuously in addition to the measures already advocated.

For *B. coli* infections the best antiseptic is hexamine, but as it only acts in an acid medium the urine must be kept strongly acid with ammonium benzoate or acid sodium phosphate; for coccal infections hexyl-resorcinol (caprokol) is better than hexamine. It is interesting to note that patients with mild cystitis are less liable to post-operative sepsis than those with a healthy bladder, for their immunity has been raised by the infection.

Many prostatic patients suffer from flatulent dyspepsia and intestinal distension, which occasionally become acute after operation. These gastro-intestinal disturbances may be due to dietetic indiscretions, but more probably, in these cases, they are symptoms of defective kidneys. When due to the latter they will only subside when the back pressure on the kidneys has been relieved by preliminary suprapubic drainage, but if the kidneys are efficient they must be treated before operation by dieting, intestinal antiseptics, and judicious purgation.

Operative Problems.

Preliminary vaso-ligation is performed regularly by many Continental surgeons, but in this country it is only employed as a routine measure by a few. It is useful as a certain preventive of post-operative epididymitis, and is definitely indicated in all cases of pre-operative epididymitis. The question of procreation need not be considered, for sterility is usual after prostatectomy. Where impotence is a consideration—and this matter should always be discussed with the patient beforehand — vaso-ligation is contraindicated.

Without discussing the merits and demerits of the suprapubic and perineal routes, it is sufficient to say that for many reasons the suprapubic operation is the one usually employed in this country. To those who operate I would only emphasize the importance of a long incision in the abdominal wall. This allows the hand to be sunk between the recti, and enables the finger in the bladder to reach the prostate with the greatest ease. This free access to the prostate also permits enucleation with a gloved and therefore sterile finger, and dispenses with the necessity for a finger in the rectum.

Pre-operative Drainage.

In many cases, the number of which will probably increase with the experience of the surgeon, preliminary drainage is required for a varying period, either by means of an indwelling catheter or a suprapubic tube. Cabot[6] has pointed out that in the early stages of prostatic enlargement hypertrophy of the bladder wall is accompanied by congestion of its mucosa, a condition which lowers its resistance and may lead to serious post-operative infection. Preliminary drainage lessens the risk by relieving the congestion. Increasing obstruction, with its accompanying residual urine, leads to so-called back-pressure effects on the kidney, manifested, at the commencement, by dilatation of its pelvis and calyces, congestion of its parenchyma, and depression of its function, and ending in chronic interstitial nephritis, renal deficiency, and retention of urea in the blood.

Relief of back pressure by drainage of the bladder will restore the depressed or tired kidney to normal in a few days, but without this relief the sudden strain thrown upon it by such a severe operation as prostatectomy might inhibit its function altogether. The diseased kidney, provided its function is not too severely impaired, will also respond to the rest afforded by drainage in a remarkable manner, and many a case which at first sight appears hopeless will eventually recover to such an extent that a successful operation can be performed.

The use of the indwelling catheter is practically restricted to cases with slight renal deficiency or chronic urinary retention, for it cannot be employed when the bladder or kidneys are infected or when the prostate is bleeding. By some patients it is tolerated well, but in others it causes discomfort and irritates the urethra and bladder, and through them the rest of the urinary tract, and so does not give such complete rest to the patient or his kidneys as the suprapubic tube. It is difficult to keep the catheter surgically clean, and it always sets up a mild urethritis which must be a source of infection when the prostatectomy is performed. Its only advantage is that it leaves the operation field clear for the subsequent prostatectomy.

In nearly all cases in which primary prostatectomy is contraindicated preliminary suprapubic drainage—in other

words, a two-stage operation—is preferable to an indwelling catheter. The suprapubic tube gives absolute rest to the patient and his urinary tract, does not irritate or infect his bladder, and enables him to move about in bed and sleep in comfort.

Pre-operative drainage is necessary (1) when there is complete retention or more than 4 oz. of residual urine, (2) for renal deficiency, (3) for severe haemorrhage from the prostate, (4) for urinary sepsis and cystitis, and (5) for the patient worn out by nocturnal frequency. It may be necessary for a week only or for several months, during which time the bladder, if infected, is treated by regular lavage, and the patient's immunity raised by an autogenous vaccine.

When the kidneys are defective the duration of drainage depends solely upon the improvement in the clinical condition and the chemical tests. If the deficiency is only due to renal fatigue from back pressure, drainage for a week or ten days will generally suffice, but when it is secondary to organic changes in the kidney drainage may be required for many months. If by nine months the blood urea has not fallen and the urea concentration is still below normal, there is no hope of improvement, and the patient must be content to wear the suprapubic tube for the rest of his life.

We all know that a tired horse will carry a load uphill if given a rest half-way, but if forced he will either jib or drop down dead. The same applies to a kidney tired out by prostatic obstruction: increase the load by a severe operation and it will cease work altogether; but if it be rested by means of suprapubic drainage, prostatectomy will eventually be possible and safe.

There are many surgeons who object to the two-stage operation on the grounds that it necessitates two anaesthetics and two operations, that enucleation is more difficult, and that a subsequent open operation is not possible. The first disadvantage is almost negligible, for the cystostomy can be performed under gas and oxygen with little or no discomfort. Enucleation may be more difficult, but not if the opening in the bladder is made high enough to permit of its enlargement downwards at the second operation. Lastly, an open operation *can* be performed, but requires care in separating the bladder from its adhesion to the abdominal wall.

However optimistic we may be, it is impossible to overlook the many dangers, both local and general, of prostatectomy, and there is no doubt that its gross mortality would be greatly diminished if the two-stage operation were more generally adopted. Only recently I heard of a case of acute retention in which an energetic operator performed an immediate prostatectomy. The patient made an uninterrupted recovery, but it is enthusiasm such as that which helps to make the gross mortality of prostatectomy in the London hospitals round about 20 per cent.[7]—a figure which is far too high.

In conclusion, let me summarize, by three hypothetical cases, the problems I have dealt with.

No. 1.—A man, aged 60, with prostatism, enlargement of the gland, and 2 oz. of clear residual urine. The tongue is moist, the appetite is good, and the complexion is clear. The blood urea is 35 mg. and the urea concentration over 2 per cent. A one-stage prostatectomy can be performed with safety.

No. 2.—A man, aged 68, with pronounced prostatic symptoms and 4 oz. of clear residual urine. The tongue is slightly dry, thirst is increased, and the appetite is not so good as it used to be. The blood urea is 45 to 50 mg. per 100 c.cm., and the urea concentration is 1.9 per cent. This is a clear case of tired kidney requiring rest for a week or ten days before prostatectomy, either by means of an indwelling catheter or a suprapubic tube. My choice would be the latter.

No. 3.—A man, aged 70 or more, with 10 oz. of residual urine, cystitis, and obvious clinical signs of a defective renal function. The blood urea is well over 50 mg. and the urea concentration below 1.7 per cent. A two-stage operation is imperative, with an interval of anything from three weeks to eight months between the first and second stages.

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THE ISOLATION OF B. PARATYPHOSUS B FROM SEWAGE.

BY

J. D. ALLAN GRAY, M.B., B.Sc., M.R.C.P.Ed.

(From the Bacteriology Department, Edinburgh University.)

In the past the demonstration of specific pathogenic organisms in sewage and water has proved of the utmost technical difficulty. Methods of selective culture, however, have greatly facilitated the isolation of such bacteria (for example, typhoid-paratyphoid group) from material in which they are greatly outnumbered by other organisms, and these methods have been most successfully applied in the bacteriological examination of faeces from cases of enterica (Browning, Gilmour, and Mackie, 1913; Mackie, 1917; and others). A further development has been the application of selective methods in the examination of sewage and water. Even though the typhoid-paratyphoid bacilli are present in communal sewage containing the excreta of diseased persons or carriers, dilution must render them exceedingly scanty in proportion to other bacteria, and it might be expected that the greatest difficulty would be experienced in demonstrating them even by selective methods. The same would apply to water. The success obtained by Wilson (1928) in demonstrating *B. typhosus* in Belfast sewage by his method of selective culture marks a great advance in this branch of bacteriological investigation. I have applied Wilson's technique along with other methods in the examination of sewage in Edinburgh, and the object of this communication is to record the results of the investigation, which seem of considerable interest and importance from the point of view of public hygiene.

Methods.

The following cultural methods were employed.

1. The "*glucose-bismuth-sulphite-iron-brilliant-green medium*" introduced by Wilson and Blair (1928) and termed by them medium B. The rationale of the use of this medium is explained by Wilson as follows. In the presence of a certain excess of sodium sulphite, bismuth sulphite tends to suppress the growth of most coliform bacilli; when, in addition, a fermentable carbohydrate is present, *B. typhosus* reduces the sulphite to a sulphide, the latter reacting with the iron salt to form iron sulphide, which blackens the colonies. The brilliant green enhances the selective action of the medium for organisms of the enterica group.

With a view to obtaining definite knowledge of the colony appearances of various organisms on this medium, strains of *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, a typical *B. coli*, *B. proteus* and *B. fluorescens* types were plated out. The growths obtained varied very considerably in appearance with the strain of organism and the period of incubation.

B. typhosus produced, after twenty-four hours' incubation, minute clear discrete colonies which after a further twenty-four hours became jet black, or, more commonly, a bright green colour.

B. paratyphosus A was similar to *B. typhosus* except that none of the colonies were black.

B. paratyphosus B. After twenty-four hours' incubation all the laboratory strains of this organism produced clear discrete colonies each 1 mm. in width. After forty-eight hours' incubation these colonies became bright green. In addition, however, one of the strains produced black colonies with a metallic lustre, which after four days' incubation were 6 mm. in diameter and had a raised greyish centre.

B. coli produced, after twenty-four hours, colonies similar to those of *B. typhosus*. After further incubation most of these became bright green; some which grew slowly assumed a black colour, but without metallic lustre.

Some strains of *B. proteus* were inhibited for twenty-four or forty-eight hours, but later produced green colonies varying slightly in shade.

B. fluorescens was also inhibited for twenty-four or forty-eight hours, but later produced dull green colonies, which eventually became brown.

When this medium was inoculated with actual samples of sewage it was found that it inhibited the growth of a very large number of the coliform organisms present. The colony appearances of any one organism, however, varied; thus, "enterica" group may be present in a given sample of sewage and yet may not necessarily produce colonies with a specially distinctive appearance.

Contrary to Wilson's findings, I found that lactose-fermenting organisms might produce black colonies on the B medium. For this reason subinoculation of such black colonies on Wilson's modification of the Endo medium, in which saccharose replaces the lactose, was deemed less suitable than on one in which saccharose was present in addition to the lactose. The presence of the second sugar does not appear to influence any action an organism may have on the other substance. MacConkey's medium containing both sugars was found to give sharper demarcation between pale and pink colonies than the corresponding Endo

medium. Any black colony on medium B which, on subculture, produced a pink growth after twenty-four hours' incubation on the double-sugar MacConkey medium was discarded. Owing to the fact that *B. proteus* and *B. fluorescens* produced pale growths, representative pale colonies on the double-sugar medium were first subinoculated on slopes of Loeffler's inspissated serum. Two days later, if the serum was unliquefied, the morphology and cultural, fermentative and biochemical reactions of the colony were examined.

2. *The brilliant green enrichment method introduced by Browning, Gilmour, and Mackie (1913).* A series of tubes of peptone water containing varying amounts of brilliant green were inoculated and incubated for twelve hours; subinoculation from each tube on a MacConkey plate was then made. The variability in the optimum concentration of brilliant green for the selective enrichment of the enterica group necessitated the use of varying amounts of the dye. The actual amounts of brilliant green used for 5 c.cm. of peptone water were: (1) 0.2 c.cm., (2) 0.3 c.cm., (3) 0.4 c.cm., (4) 0.5 c.cm., (5) 0.6 c.cm., (6) 0.7 c.cm. of a freshly prepared 1 in 10,000 solution, and it was found that the best results were obtained from the tubes containing 0.4 c.cm. and 0.5 c.cm. of the dye.

3. *Rakieten and Rettger's modification of the original brilliant green method.* In this method, prior to the addition of the brilliant green 0.4 c.cm. of a phosphate buffer solution was added to each tube and the reaction adjusted to a *p*H 6.5. The buffer is added to prevent alkalinization of the medium during growth, with the consequent precipitation of the dye.

4. *MacConkey's medium.* In addition, the samples of sewage were plated directly on MacConkey's medium. It was found impossible to isolate paratyphoid bacilli in this way owing to overgrowth by lactose-fermenting organisms.

5. *Wilson and Blair's lactose-bile-salt-brilliant-green medium* (for the isolation of *B. paratyphosus* B) was not found sufficiently inhibitory to coliform organisms, and did not yield sufficiently characteristic colonies in the case of the enteric group. It was therefore not used for sewage.

Examination of the Sewage.

Six samples of sewage were taken in sterilized bottles first from main sewers of four different districts of the city, which may be named A, B, C, and D for reference purposes.

Each of the *selective* methods elicited the presence of *B. paratyphosus* B in the sewage from District A on two of the three occasions on which it was examined. In agglutination and agglutinin-absorption tests each of the strains of the organism corresponded exactly with *B. paratyphosus* B (Schottmüller), controls being performed in which *B. paratyphosus* B serum was treated with emulsions of the homologous organism and *B. aertryeke* and its agglutinating properties then tested with these organisms.

A considerable number of the black colonies on the B medium had to be subcultured and examined further to enable the paratyphoid bacilli to be picked out. This was probably due to the fact that, according to Wilson and Blair (1928), *B. paratyphosus* B behaved on bismuth sulphite media more like a reducing *B. coli* than *B. typhosus*, with the result that the plates had to be incubated for more than twenty-four hours before colonies of *B. paratyphosus* underwent blackening. Organisms other than those of the enteric group therefore had time in which to develop a black coloration.

Since the main sewer of District A contained *B. paratyphosus* B the contents of each of the various tributary sewers entering it were next examined on two occasions. These tributary sewers were numbered from 1 to 7, starting with the most outlying one and ending with the side sewer entering the main sewer nearest to the latter's termination. It was found that of these seven tributaries three contained *B. paratyphosus* B, the identity of the organism being established as before by serological tests. Sewers Nos. 4 and 7 were positive on both examinations, but No. 5 on the second examination only. Thus, in all, *B. paratyphosus* B has been isolated by selective methods from seven out of the twenty samples examined.

The numbers of black colonies on medium B from the same amounts of different samples varied greatly even when the samples had been obtained at approximately the same hour of the same day and therefore could not have been unequally affected by rainfall. For instance, in the first sample obtained from No. 4 there were 209 black colonies on the B plates inoculated with 2.5 c.cm. of the sewage, while a similar amount of the sample from No. 2 obtained at approximately the same hour of the same day showed only 36 black colonies. It may be noted here, too, that the sample from No. 4 was peculiarly rich in *B. paratyphosus* B, for these 209 colonies were all identical in appearance with eleven colonies examined, ten of which were finally identified as *B. paratyphosus* B. The unevenness in the distribution of the organisms producing black colonies on the bismuth sulphite media in one sample rendered useless any attempt at making a quantitative estimation as to the minimal amount of sewage from which *B. paratyphosus* B could be isolated.

Survival of B. paratyphosus B in Sewage.

Experiments were also performed with a view to determining the period of survival of *B. paratyphosus* B in the sewage. All the samples from the main sewers were examined one, two, and four days subsequent to their withdrawal from the sewer in a manner identical with that in which they were examined on arrival at the laboratory as above described. In no instance was *B. paratyphosus* B isolated, so that the evidence pointed to a short period of survival of the organism in sewage.

Comparison of the Selective Methods Employed.

It is difficult at the present time to draw a definite comparison between the selective methods employed. The results obtained by their use varied considerably. In some cases positive results were obtained by each method, but it was found that any one of the three selective methods might fail to reveal the presence of the paratyphoid bacilli, while at least one of the other methods gave positive results.

The plates of Wilson's medium when inoculated with the last four samples taken from the side sewers remained completely sterile. As far as could be ascertained the medium for this batch of plates was prepared in a manner identical with that adopted for the making of the previous samples of media. In the earlier tests the B medium had revealed the presence of *B. paratyphosus* B in every sample of sewage in which the organism had been found by the brilliant green enrichment methods. Wilson and Blair assert that "the bismuth sulphite media enormously increase the chances of isolating typhoid bacilli," and the same undoubtedly holds good for the paratyphoid bacilli.

The brilliant green enrichment methods, although usually effective, were found on occasion to give negative results, when the B medium revealed paratyphoid colonies. In the first sample taken from tributary sewer 4, plates of B medium inoculated with 2.5 c.cm. of the sewage yielded 220 suspicious colonies, ten of the eleven examined proving to be *B. paratyphosus* B; neither of the enrichment methods showed the presence of the organism at all. This was to a large extent due to overgrowth by *B. fluorescens* and *B. proteus* types. Many of the pale colonies, too, were found on identification to be types of Morgan's bacillus. After considerable experimentation it was considered that Rakieten and Rettger's modification did not produce results better than the original method, and in the first sample from side sewer 7 it proved negative while the original method gave a positive result.

Loss of Motility of B. paratyphosus B.

An interesting feature elicited was the loss of motility of certain of the laboratory stock strains of *B. paratyphosus* B, as well as of some of those isolated from the sewage, when grown on medium B. Their motility, however, returned on subinoculation into ordinary nutrient media. Loss of motility of *B. typhosus* in the presence of brilliant green was also observed by Rakieten and Rettger.

Discussion of the Findings.

The results are of special interest as they confirm (for another city in the British Isles) Wilson's finding of an enteric group organism in communal sewage.

So far samples from only four out of the twenty-three districts of the city have been examined, and all those found to contain the paratyphoid bacilli had been taken from sewers in one and the same district. At an early stage of the work enteric organisms were isolated from the main sewer of this district, and all sixteen samples of the second series were obtained from the same district, with

a view to ascertaining whether the organisms were limited to sewage from a localized area. The work was then discontinued owing to the onset of extremely cold and wet weather. The question of the distribution of enteric organisms in the other districts of the city therefore remains to be determined.

Since the city of Edinburgh is at present comparatively free from enteric fever, the presence of *B. paratyphosus* B in the sewage of a particular district is in all probability mainly due to resident "carriers;" and it is significant that this district was the locus of an outbreak of paratyphoid B fever in 1927. The medical officer of health of Edinburgh, in his report for that year, has made special reference to sewage as a source of this outbreak. Owing to the inability of the main sewer of the district to carry off the excessive volume of water during a flood, two of the byre steadings concerned in the outbreak were inundated with overflow from drains and sewers near-by. It seems not unlikely that the milk may have become infected through contamination of the premises in this way. Of course, for the infection to have been thus transmitted the sewage dammed back into the byres must not only have contained the specific organism at the time in question, but must also have been fairly heavily contaminated in view of the dilution with the flood water. The presence of a "carrier" actually at or near the byres would, of course, increase the probability of this happening, but it must not be forgotten that such a "carrier" may have introduced the infection by more direct contamination of the milk vessels.

The suggestion is put forward that, by ascertaining the points of entry of the *B. paratyphosus* B into the various tributaries of the main sewers found to contain paratyphoid bacilli, "carriers" of the organism might be located with the help of public health officials. Criticism may be raised that the strains of *B. paratyphosus* B (Schottmüller) isolated might be of animal origin, for Jordan (1923) has recorded strains of porcine origin belonging to the Schottmüller type. In District A of the city, from which the sewage in question was obtained, there are a number of piggeries, but the rarity of strains of porcine origin and the small proportion of excretal matter from such piggeries in the communal sewage would render unlikely the possibility of these strains coming from such a source. The excreta from several of the piggeries in the district have been examined by the same methods as those which were applied to the samples of sewage, but no paratyphoid bacilli have thus far been isolated. The question, however, is still receiving attention.

SUMMARY.

1. *B. paratyphosus* B (Schottmüller) has been isolated by selective methods from 7 out of 20 specimens of sewage from the city of Edinburgh. Seventeen of the samples, including all the positive ones, were from one district, and were selected in view of the preliminary finding of the organisms in the main sewer of the district.

2. Comparison has been made of three selective methods: (1) Wilson and Blair's "glucose-bismuth-sulphite-iron-brilliant-green medium"; (2) Browning, Gilmour, and Mackie's brilliant green enrichment medium; and (3) Rakieten and Rettger's modification of the second. Any one of the three methods may fail to detect paratyphoid bacilli isolated by the others. Wilson and Blair's method has the advantage that it is a direct plating method, and the enrichment methods have the disadvantage that they tend to permit overgrowth of *B. fluorescens* and *B. proteus* types, which are prevalent in sewage.

3. The organisms are probably very unevenly distributed in the sewage.

4. No evidence has been obtained that paratyphoid bacilli survive for long periods in sewage.

5. The danger of the presence of *B. paratyphosus* B in sewage is discussed, particularly in relation to an outbreak subsequent to the flooding of two byres in 1927, and it is suggested that this method could be adopted in the tracing of "carriers."

6. The possibility of the strains of *B. paratyphosus* B isolated being of animal origin is considered unlikely.

I desire to express my thanks to Professor T. J. Mackie for his advice and guidance in the course of this investigation, and to the burgh engineer and his staff for their willingness in providing samples of sewage.

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TORSION AND STRANGULATION OF A HYDATID OF MORGAGNI.

BY

D. A. ABERNETHY, B.M., B.CH.OXON, F.R.C.S.ED.,

HONORARY ASSISTANT SURGEON, RADCLIFFE INFIRMARY, OXFORD.

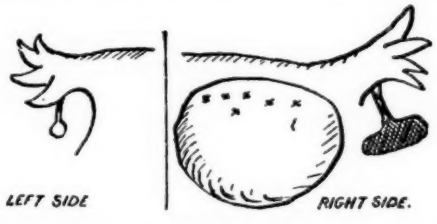
I RECENTLY removed a strangulated and thrombosed hydatid of Morgagni which was giving rise to symptoms resembling those of mild appendicitis. Such a lesion must be very uncommon, and the following details would therefore seem to be of general interest.

A woman, aged 33, who complained of right-sided abdominal pain, was seen by me on August 6th, 1928. She stated that during the previous three weeks she had had several attacks of pain in the right iliac fossa. This pain was colicky in character, and had become so much worse during the last three days before she came to hospital as to provoke vomiting on several occasions.

Her menstrual history was as follows. The last regular period was on May 8th; two months' amenorrhoea followed, after which she experienced irregular losses containing clots, but no obvious products of conception. She had had three pregnancies, all of which resulted in healthy children at full term. In 1921 she had an attack of pain in the right lower abdomen, which was diagnosed as appendicitis, but cleared up without operative intervention. She had never had any similar pain until the present time.

On abdominal examination pain and tenderness were found low down in the right iliac fossa above the lateral third of Poupart's ligament, and slight rigidity over the lower right rectus muscle; no other abnormality was noted. The temperature and pulse were both slightly raised—99.4° F. and 80.

A vaginal examination revealed that the cervix was soft; the external os admitted the finger-tip; the body of the uterus was normally anteverted and anteflexed, and was enlarged to the size of a nine weeks' pregnancy. On the left side there was palpable an ovarian cyst, about two inches in diameter; on the right side the adnexa were not easily palpable, and rather immobile. A diagnosis was made of incomplete abortion, possibly due to right-sided oöphoritis secondary to inflammation of a pelvic appendix.



On August 20th, under spinal anaesthesia, I confirmed these findings by a further bimanual examination, and explored the uterine cavity, from which were removed several necrotic fragments of placental tissue. Pelvic laparotomy was then performed in order to investigate the condition of the appendix and the adnexa on the right side. The appendix was long and showed some slight thickening, but was not markedly abnormal; there was an ovarian cyst on either side, and hanging from the fimbriated extremity of the right tube was a reniform body, black in colour, and measuring about 3/4 by 1/4 by 1/4 inch, in the position in which one would expect to find the hydatid of Morgagni. It showed two well-marked twists in its pedicle, and was much larger than the normal hydatid on the left side. The peritoneum covering it was thick and lustreless. This body was removed without salpingectomy, and appendicectomy was performed.

The appendix, examined subsequently, showed signs of some chronic but no recent inflammation. The reniform body, on pathological examination, was pronounced to be a strangulated hydatid

of Morgagni, and is preserved in the Pathological Museum of the University of Oxford. The patient made an uninterrupted recovery.

This case has seemed worthy of record rather on account of the rarity of the condition than of its clinical significance. I have failed to find any allusion to this lesion in the literature of the subject, nor do any cases appear to have been published recently, at least in this country, America, or on the Continent. It would be interesting to know whether previous cases have been observed but not published.

The description of the original colicky pain was suggestive of a uterine origin, and was attributed to the incipient abortion, but the severe right-sided pain which induced vomiting did not begin until the abortion was almost complete—that is, three weeks later—when the uterus contained nothing but a few necrotic fragments. It seems not improbable that this pain was due to the stretching of the covering peritoneum produced by the engorgement of the strangulated hydatid. No cause was found for the torsion. The ovarian cysts were both simple follicular cysts following an old perioöphoritis, which had produced on the right side a few inconsiderable adhesions; the appendix presumably could have had nothing to do with the condition.

TORSION OF THE APPENDIX OF THE TESTIS (HYDATID OF MORGAGNI).

BY

L. R. BROSTER, D.M., M.CH.OXON., F.R.C.S.,

ASSISTANT SURGEON, CHARING CROSS HOSPITAL; SURGEON, QUEEN'S HOSPITAL FOR CHILDREN;

AND

RALPH COYTE, M.B., B.S.LOND., F.R.C.S.,

ASSISTANT SURGEON, ALL SAINTS' HOSPITAL, QUEEN'S HOSPITAL FOR CHILDREN, AND PRINCE OF WALES'S GENERAL HOSPITAL, TOTTENHAM.

THIS condition appears to be one of rare occurrence, in view of the fact that we can find no reference to it in standard textbooks or recent English literature. It is therefore of interest that during the year 1928 we have each operated on two such cases at the Queen's Hospital for Children. All four cases we were able to diagnose before operation.

In each case the patient was a boy aged 12 years, and had not attained puberty. The cases demonstrated a marked similarity of onset and subsequent history, and the following case may be taken as typical.

The patient, five days before admission, complained of sudden pain in the right testis, without history of trauma. There was no vomiting or constitutional disturbance. Pain continued in spite of rest in bed, and on attendance at hospital the following condition was observed. There was swelling and tenderness of the whole testis, the skin of the scrotum was reddened and oedematous, and the spermatic cord was thickened throughout its length. On palpation a small body, about the size of a pea, was felt lying between the upper pole of the testis and the globus major. This small swelling was exquisitely tender, and not freely movable.

At operation the tumour was found to be of a deep plum colour, and obviously full of blood clot. There was marked oedema of the spermatic cord. The tumour was in the position of the hydatid of Morgagni, and had a pedicle, which had obviously undergone torsion. The pedicle was ligatured and the hydatid removed. On microscopic examination the following report was obtained: Section shows organizing blood clot undergoing degeneration; here and there are cystic spaces lined with flat unciliated epithelium.

The patient was immediately relieved after operation, and made an uninterrupted recovery.

In one case of five days' duration the hydatid showed signs of commencing sloughing. Another case was brought to the hospital six hours after onset, and already demonstrated oedema and reddening of the scrotal skin. Two cases occurred on the right side, and two on the left.

In conclusion, we wonder if this condition is really of rare occurrence, or whether these cases are frequently treated as orchitis of unknown origin, and left until the twisted hydatid sloughs, and resolution eventually occurs; presumably a painful and protracted process.

VARICOSE VEINS: THEIR MODERN TREATMENT BY SCLEROSING INJECTIONS.

METHODS AND TECHNIQUE OF "SICARD AND GAUGIER" AS PRACTISED AT THE HÔPITAL NECKER, PARIS.

BY

P. KENNEDY MURPHY, M.A., M.D., B.CH.,

LATE TEMPORARY ASSISTANT SURGEON TO ST. MARK'S HOSPITAL FOR DISEASES OF THE RECTUM.

SCLEROSING injections for the treatment of varicose conditions have emerged successfully from the trial stage and are now almost universally regarded as being safe, effective, and the treatment of choice for varix.

The object of treatment is to obliterate the whole or part of the veins concerned in the superficial circulation of the limb—namely, the internal and external saphenous veins and their branches. These veins run in the subcutaneous tissue and have no support except their own walls; when the superficial circulation is occluded the blood returns by the deep veins, which are well supported by the muscles of the leg.

The principal points of interest to the doctor who intends taking up this work are: (1) methods of selecting cases suitable for treatment; (2) technique of injection; (3) choice of sclerosing fluid and strength of dosage; (4) number of injections necessary and interval between each; (5) the pathological effects of injection on the vein; (6) after-effects and possible complications. The advantages of this method are that when properly administered injections are safe and certain in their results, cause little pain or discomfort, and the patient need not lie up.

A bewilderingly large literature on injection treatment is being added to daily; most of it is interesting and helpful, but a lack of agreement on the essential points just mentioned is unfortunately a frequent and salient feature. In the confusion thus caused many who wish to take up this work find it difficult to decide what procedure to follow. Ill results of a serious character following treatment are being reported with increasing frequency, and are mainly due to defective technique and lack of authoritative knowledge on the subject. As it is universally conceded that it is to Professor Sicard of Paris we are indebted for establishing, in 1916, the treatment of varicose veins of the limbs by injection as a safe and effective procedure (the idea had been experimented with unsatisfactorily for seventy years), those who are about to adopt this method of treatment for the first time will be wise to follow the methods of this, the greatest authority, or at least adopt those methods as a sound basis on which to found their own experience. (The principle of employing sclerosing fluids for treatment of varix was, however, first successfully put into practice by British doctors, but only for the treatment of haemorrhoids. Morgan and Colles of Dublin were the pioneers seventy years ago, and Mr. Swinford Edwards, whose house-surgeon at St. Mark's Hospital it was my privilege to be, first introduced the method to this country, his article in the *British Medical Journal* of October 13th, 1888, being still one of the most instructive.)

Sicard's opinions and advice on this subject are as authoritative as Ehrlich's on the treatment of syphilis by arsenical injections. His special clinic at the Hôpital Necker, Paris, is of world-wide reputation, and here he and his colleagues, Gaugier, Paraf, Forestier, Haguenau, and Lermoyez, have treated many thousands of cases, necessitating hundreds of thousands of injections, with excellent results and without a single serious mishap.

Sodium salicylate is the sclerosing injection they recommend, and since the publication of their results many other workers, acknowledging their indebtedness to Sicard's work, have endeavoured to find, if possible, an even more effective chemical for injection; quinine (Génévrier), mercury biniodide (Montpellier and Lacroix of Algiers), glucose (Nobl), the citrate (Troisier), chloride (Linser), and carbonate of sodium, and other solutions, all have now their own advocates. Every new sclerosing fluid recommended by any authoritative worker is given an

extensive trial in a series of cases at the Hôpital Necker, and compared with a series of cases treated by sodium salicylate, and many thousands of injections of the solutions just mentioned have been given in this fashion. From this unique experience Sicard and his colleagues are of opinion, whilst appraising the work of the distinguished men just mentioned, that sodium salicylate is the most effective, safest, and gentlest in its after-effects, of all injections.

Thanks to the courtesy of Professor Sicard and Dr. Gaugier it was my privilege to assist on many occasions at the injection of a large number of cases at the Hôpital Necker, and I am deeply indebted and grateful to Dr. Gaugier for his kindness in explaining to me their methods and technique, which I have since followed with most gratifying results. I had for many years previously had much experience of sclerosing injections in the treatment of haemorrhoids, both at St. Mark's Hospital and in private practice, and had given many thousands of intravenous arsenical injections, mainly at the London Lock Hospital, so that the acquisition of the technique presented few difficulties. These methods and technique, which I will state as briefly as possible, are as follows.

1. *Selection of Cases.*

Every patient should first undergo a complete general examination—heart, kidneys, etc.

Contraindications to Injection.—(*a*) Obstruction in the veins of the deep circulation is the most important. To ascertain if the deep circulation is obstructed, fasten a tourniquet below the knee and make the patient walk round the room. If no obstruction is present the swollen veins empty themselves into the deep circulation, and then appear almost flat, but should occlusion exist the superficial veins of the leg become more swollen and the leg painful. Should this test be neglected and injection given when the deep circulation is occluded a most painful and oedematous condition of the limb, coming on rapidly, due to stirring up of the phlebitis, and lasting many weeks, may result. Phlebitis of the deep veins, of old or recent origin, is the commonest cause of obstruction, and phlegmasia alba dolens is the commonest cause of deep phlebitis. Marked dilatation in the veins of the pubic area when present is usually a relic of this condition, and should put one on guard. (*b*) Arteritis (intermittent claudication) and any condition in which embarrassment of the circulation already exists. The clinical history is the best guide in the diagnosis of intermittent claudication; in this condition the patient suffers whilst walking and is relieved on standing, whilst the varicose patient suffers while standing and is relieved on walking. (*c*) Cardiac insufficiency of any degree and advanced kidney disease are the next most important contraindications. When other cardiac lesions exist, and when albumin or sugar is present even in small amounts, injections should be administered with great caution. (*d*) Excessively high blood pressure. (*e*) Extreme old age. (*f*) Pregnancy is a contraindication, because varicose veins associated with this condition either undergo spontaneous cure or get considerably better soon after delivery, but especially because it has been demonstrated by Bar that the blood of pregnant women is hyperfibrinous, and therefore predisposed to phlebitis. Marked vulvar varicosities can, however, be injected, as they may be a serious complication at the time of delivery. (*g*) Multiple uterine fibromata may also be a contraindication.

2. *Technique of Injection.*

The patient stands on a chair beside a table, the latter being provided with a handrail on which the patient leans (it is now possible for special tables to be obtained). The upright position renders the veins tense, a tourniquet being useless. The most prominent point of the most prominent vein of the leg below the knee is selected; midway between ankle and knee is, as a rule, the best part to choose. The injection must be completely intravenous, and made with the usual aseptic precautions of sterilizing skin, needle, etc. The syringe should be of light weight; a small all-glass 5 c.cm. syringe is best. The injection, as a rule, is best made in two stages, especially when the veins are not very large. It is well to have two of the small glass syringes, one empty with needle attached, the other without needle and filled with solution. The size of the needle should be that of the ordinary small hypodermic syringe, and the point should be very short. The vein is entered with the needle attached to the empty syringe, the patient standing. To ascertain if the needle is in the vein the piston is slightly withdrawn, when blood should enter the syringe. When blood enters the syringe (and not before) the syringe is detached from the needle, and whilst the needle is still in the vein the patient is made to lie down. When the patient is lying down (not before) the syringe filled with solution is attached to the needle in the vein; injection should be done slowly, especially as regards the smaller veins, otherwise painful spasm or rupture, leading to escape of fluid and subsequent ulceration, may occur. The standing position makes it easy to enter the vein. The recumbent position causes the vein to empty itself, and if the solution is injected then it gets into immediate and intimate contact with the endothelium. The needle is allowed to remain in the vein for one minute at the end of injection, and is then briskly withdrawn, a tampon of cotton-wool being rapidly pressed over the point of exit. This is important, a common cause of pain, local discoloration, and ulceration after injection being the slow withdrawal of the needle, which allows some of the injected solution to escape into the surrounding tissues. Should the veins be large the injection can be made in one stage, with the patient lying down.

There are two causes of pain at injection; the first is injecting the fluid outside the vein. The patient complains immediately of pain and burning at the site of injection. The needle should be withdrawn at once and another part of the vein selected. The second kind of pain is cramp-like or stinging, and may extend the whole length of the limb. It usually comes on towards the end of, or immediately after, injection, and is due to vasomotor disturbance caused by the solution irritating the endothelial lining of the vein and thus exciting the sympathetic. It lasts about a minute or two, is quite bearable, and does not recur. This pain does not always happen, but does so frequently. The patient should be warned to expect it, and assured that it will only last a minute or two and will not return. It is best to keep the patient lying down for about ten minutes after injection, as muscular action is liable to aspirate the fluid from the superficial circulation into the deep. In the region of the malleolus and over bone the injections should be small in amount and of weak strength, otherwise pain and oedema lasting some weeks may result. As only large varicose veins are easy to inject, considerable practice in intravenous technique is advisable before consistently successful results can be attained.

3. *The Sclerosing Fluid and Strength of Dosage.*

Sodium salicylate is the injection of choice. It should be a chemically pure and colourless solution. Solutions which have turned violet should be rejected. The salicylate should be made up in specially hard glass which cannot be acted on by the solution. The first injection should consist of 2 c.cm. of a 20 per cent. solution, and this amount and strength should not be exceeded at a first visit. Two days later the second injection is given, the amount and strength of which depends on the effect produced by the first. The injections are gradually increased in strength and quantity, 3 c.cm. of 30 per cent. being given on the second and 4 c.cm. of 40 per cent. on the third occasion. One should never exceed 6 c.cm. in amount and 40 per cent. strength at one visit. The action produced by the preceding injection is the true guide to the strength and amount of each succeeding injection, and a little practical experience will soon teach the surgeon much on these points. The strength and amount of dosage should, however, be increased as rapidly as possible when no contraindications exist, in order to hasten the irritation of the endothelial lining of the veins; small and weak doses frequently repeated only harden the walls of the vein without causing obliteration, and the veins thus hardened will offer a great resistance to subsequent injections even though those injections be numerous and strong; this is the commonest cause of failure to procure obliteration. It is inadvisable to add novocain or any other

analgesic to the salicylate with the object of diminishing the cramp-like pain. The novocain renders the fluid anaesthetic, and in the event of the solution being injected by mistake into the perivenous tissues, the absence of pain may cause the doctor to be unaware of his error and subsequent ulceration will be the result.

4. *Number of Injections Necessary and Interval between each.*

This depends on the number, extent, tortuosity, and calibre of the veins, and on whether one or both limbs are varicose, five or six injections as a rule being sufficient for each limb. Three to five inches of vein on an average are usually occluded with 4 c.cm. of a 40 per cent. solution, but much more is not infrequently obliterated; two injections of 5 c.cm. of 40 per cent. solution are sometimes sufficient to obliterate completely the internal saphenous vein.

There is no fixed rule as to interval between injections. If both limbs are affected the patient may attend daily, each limb being injected on alternate days, a different segment of vein being selected each time, depending upon the amount of reaction of the previous injection. With experience the necessary knowledge on these points will soon be acquired.

5. *Effects of Injection on the Vein.*

The manner in which chemical injections cause obliteration of veins is different from that in which infective phlebitis is produced. The immediate effects of injection are vasomotor, especially vaso-constriction (through stimulation of the sympathetic which supplies the smooth muscle regulating the calibre of veins), pallor of the part, and a "goose flesh" appearance of the skin. A chemical endovenitis with thrombosis occurs during the first hour, and some hours later the inflammation spreads to all the coats of the vein and even outside the vein (periphlebitis). This has been proved (Jentzer and Askanazy) by adding collargol to the salicylate solution and then injecting the mixture. Part of the vein was then removed, the collargol being found in all tunics of the vein and seen in the tissues outside the vein. This type of inflammation is called "venitis": it is localized, limited, and chemical in origin; as distinguished from infective "phlebitis," which is diffuse, of infectious origin, and attacks the deep veins. Embolism does not occur in "venitis," as the clot is aseptic and firmly adherent to the vessel wall, whereas in "phlebitis" the clot may be soft or brittle, and embolism is frequent. The termination of the "venitis" is as follows. The sclerosing fluid irritates the endothelium, which becomes congested and hypertrophied. The fibrin of the blood becomes deposited on the whole length of the irritated and injured endothelium, to which it adheres firmly. The clot becomes organized, sclerosis follows, and the venous cicatricial tissue becomes gradually absorbed in the following weeks. In venitis there is no fever as in phlebitis, because there is no infection; no oedema, because the superficial veins, and not the deep ones, are alone obliterated; and there are no continuous severe pains as in phlebitis, because the vessels of the nerves (the vasa nervorum) are not affected by the salicylate solution. It happens very occasionally that, owing to ulceration, an infective venitis—that is, of a superficial vein—is found; but even in this condition embolism is extremely rare, practically never occurring unless the deep veins are infected. Sicard and Gally proved radiographically (by means of lipiodol in the vein) that the blood flow in varicose veins is reversed, therefore even if embolism does occur it is not dangerous, as the embolus would be carried towards the periphery and not centrally. No case of embolism has occurred at the Hôpital Necker in over three hundred thousand injections, and in my own experience, including the treatment of haemorrhoids with sclerosing injections in many hundreds of cases, I have never had a single case of embolism. Dr. Bensaude of the Hôpital St. Antoine, Paris, the best known French authority on the use of sclerosing injections for the treatment of haemorrhoids, assured me that in the thousands of cases he has treated embolism had never occurred.

Painful Effects of Injection and their Causes.—When the injection has been properly given there are only two possible painful effects, the one immediate—that is, the cramp previously mentioned, a vasomotor phenomenon always temporary, quite bearable, and without danger—the other, more remote and not common, "perivenitis," which is never serious, and indeed when it occurs causes a more rapid and certain cure. Whilst perivenitis persists the part looks red and is tender and warm to touch, but there is no temperature and the patient need not lie up unless symptoms are excessively painful, which is rare. When ulceration occurs following injection it is due to the solution entering the perivenous tissues through faulty technique as follows: (*a*) Injecting fluid outside the vein; (*b*) rupture of the vein from employment of a too strong solution and especially an excessive quantity of a strong solution, and (*c*) injecting small veins too rapidly, causing rupture; (*d*) lack of asepsis. In several hundred cases in whose treatment I assisted at the Hôpital Necker and in my own practice I have not seen one instance of ulcer due to injection of sodium salicylate. As success depends mainly on skilful technique, sclerosing injections, either for haemorrhoids or varicose veins of the limb, should only be given when experience in rectal and intravenous work has been acquired.

6. *After-effects and Possible Complications.*

(*a*) Perivenitis, just mentioned, is the only important after-effect; it usually lasts a few days, rarely longer than a week, and no special treatment or bandage is necessary. In the rare cases where reaction is excessive, rest, local applications, and a supporting bandage are advisable. It must be understood that I am only speaking of the effects of sodium salicylate. With some other solutions marked and very painful perivenitis is not uncommon, and in these cases the treatment ceases to be ambulatory. All varices are not equally affected by injection. The single sinuous vein will frequently yield to even a weak sclerosing solution, and disappears rapidly with no after-effects such as pain or discomfort. In these days of short dresses this type of vein, by protruding through the thin stocking, causes much disfigurement. For this reason more women than men, from "mobiles de coquetterie," as Sicard says, present themselves for treatment, men as a rule only seeking advice when they suffer from voluminous varices which cause much discomfort and hinder them working. The after-effects are naturally more marked in the latter type of case. (*b*) A pigmented brownish line which marks accurately the course of the obliterated vein may persist for a long time; it is due to the destruction of the sympathetic in the sclerosed vein.

Complications of varicose veins such as eczema, ulcer, and haemorrhage, are not contraindications, but are themselves benefited by injections; in the case of ulceration local treatment should be employed in addition to the injections, which latter should be given in the healthy area away from the ulcer. The veins diminish in calibre from the day of injection, and the patient rapidly loses the feeling of heaviness in the limbs of which he previously complained, and all that can be felt (not seen, because the vein does not protrude under the skin after the first injection) is a hard cylindrical zone slightly painful to touch. The patient need not lie up after injection, but can carry on his work and social duties as usual.

Recurrence does not take place in veins which have been completely sclerosed, but occasionally sclerosis is incomplete (especially if the injection has been made perivenously as for haemorrhoids) and the central lumen persists. Fresh injections into the thickened vein will be necessary. New varices sometimes appear a few months after treatment. These readily yield to further injections.

When the sclerosing treatment is finished, general treatment should be instituted in most cases to maintain and prolong the effects of the local treatment. This general treatment should be directed towards the cause of the varices. Sicard and Gaugier are of opinion that varix (excluding that due to pressure and infection) is endocrine in origin—a special hormone circulating in the blood and acting on the sympathetic which regulates the calibre of the vein. When the internal secretion of the endocrine glands is defective or vitiated, varicosity results; in their opinion the genital glands (testicles and ovaries) and hypophysis

cerebri are those chiefly concerned, and a course of treatment with extracts of these glands is suggested. Violent exercise, excessive standing, and constipation should be avoided and attention to general hygiene counselled.

The technical details in the foregoing paragraphs are written with the approval of Professor Sicard and Dr. Gaugier, to whom I again express my thanks and indebtedness for enabling me to place them before their British confreres.

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A NEW METHOD OF TREATMENT OF LEPROTIC INFECTION OF THE NASAL MUCOSA.

BY

F. G. ROSE, M.D., D.M.R. AND E.CAMB.,

MEDICAL SUPERINTENDENT, MAHAICA LEPER HOSPITAL, FORMERLY GOVERNMENT BACTERIOLOGIST AND PATHOLOGIST, BRITISH GUIANA.

THOUGH in leprosy the nasal mucous membrane is no longer held to be a common site of the primary lesion, it nevertheless remains true that, particularly in cases of the so-called systemic type, the nose, either internally or externally, is a region of very great importance with regard both to frequency of involvement and persistence of infection. In pure nerve leprosy, however, nasal lesions are not common, and indeed probably all supposed nerve cases which show infection of the nasal mucous membrane should be considered to belong to the systemic type.

External lesions of the nose show features no different from those of lesions of the skin covering other parts of the face. Internally the nasal mucous membrane may be the seat of a generalized infiltration of the whole mucosa or localized infiltrations of the septal mucosa, which, when they ulcerate, as sometimes happens, are very difficult to treat. The lesion may spread to the cartilage of the septum, leading to perforation or to complete destruction, or it may extend to the skin at the margins of the alae nasi, forming a creeping ulceration, which gradually erodes the skin and underlying tissues. Probably in some cases the accessory sinuses become involved, and in many, generally advanced, cases it spreads backwards with infiltration and ulceration of the nasopharyngeal and laryngeal mucous membrane. A few early cases of the systemic type have been seen in which the first visible lesion was in the skin of the nose. In these the nasal mucous membrane, at first uninfected, later became involved, apparently by direct extension from the skin.

The affected mucous membrane is never insensitive, sometimes it is highly sensitive, and the ulcers which occasionally form tend to become encrusted and to remain so for long periods. The removal of these crusts causes haemorrhage, which may be severe, and one never fails to find numbers of bacilli beneath. If, when taking a swab, the crust is not removed, the smear may be negative. Wade and Solis[1] have stressed the importance of examining the nasal mucous membrane of the "negative" leper. In this country great emphasis has been laid on such examination, probably too great, for cases bacteriologically negative are not segregated and are *ipso facto* deprived of treatment, which is carried out only at the Leper Hospital. These cases at length swell the ranks of the mutilated victims, who still form a large proportion of our segregated lepers. Our experience here is that some 70 per cent. of cases of the systemic type and some 20 per cent. of cases of the nerve type show infection of the nasal mucous membrane before treatment.

Of late years we have been fortunate in obtaining a number of early cases where nodular infiltration has barely commenced, or at any rate is by no means widespread. In these cases, where nasal infection exists, it tends to persist after the nodules have disappeared. Moreover, in many cases, particularly of the nerve type, this persistence may postpone for some time the conditional discharge of the patient. From these considerations the importance is obvious of a line of treatment which will sterilize the nasal mucous membrane in a few months.

Technique of Treatment.

Ionization appears to bring about the required result. At first we used a 1 per cent. solution of sodium salts prepared in this laboratory by saponification from "hydnocreol," which is pure creosoted hydnocarpus oil supplied under this trade name by Messrs. Smith, Stanistreet and Co., Calcutta. Afterwards we used alepol, potassium iodide, and sodium chloride in 1 per cent. solution. The ionization current was obtained either from a galvanic battery or from the main through one of the galvanosets manufactured by the Medical Supply Association, London. Nasal electrodes were improvised from the ordinary small "button" electrodes, wrapped in absorbent wool which had been immersed for a short time in the solution to be used. One electrode was placed in each nostril, pushed well up and kept in position by means of bandages or rubber bands. The patient was told to breathe through the mouth, and a current, whose amperage (usually 20 to 30 ma.) was limited by his capacity of endurance, passed for twenty to thirty minutes.

Type of Cases Treated.

The patients treated may be divided into three groups. (1) Thirteen cases of both systemic and nerve types who had received the usual general and specific treatment for periods varying from nine months to two years, with disappearance of all signs save infection of the nasal mucous membrane. (2) Ten cases, all of the systemic type, under treatment for similar periods, but still showing other signs of activity besides intranasal infection. (3) Two cases of the systemic type before commencing treatment. All these patients were examined once weekly, the whole surface of the nasal mucous membrane being swabbed on both sides to the point of abrasion. The whole slide was examined before being returned as negative or as showing very few bacilli. Five controls, including representatives of the first two groups, were similarly examined week by week.

Results of Treatment.

No lessening of the number of bacilli is apparent until about ten to fourteen days after treatment. Bacilli may disappear after one or two sessions, but frequently there is a relapse, and at least three sessions, generally more, at fortnightly intervals, appear to be necessary for permanent cure. The treatment is somewhat unpleasant, but is readily borne, even by small children, and patients say that nasal breathing is much freer after the treatment. About two weeks after the last of three or more sessions, often after only one or two, the bacilli either disappear or become fewer in number and hard to find on the slide. Later there comes a stage when negative results alternate with positive, a stage which, as the Culion workers have pointed out, often precedes the permanent stage in cases improving under general treatment.

Thirteen of the twenty-five cases treated have been returned at least once as negative, some eight times in succession, though only six had at any time since their admission given a negative result, and then in each case on a single occasion.

Nineteen of the twenty-five have either become negative or show such a reduction in the numbers of bacilli that they have become very hard to find. In the other six cases, all of long standing, it is possible that the sinuses had become involved. The controls showed no such reduction or extreme variability in the results of nasal examination.

It is impossible at present to say whether the cure is permanent, for only two months have elapsed since the conclusion of treatment in many of the cases, but owing to the impending absence of the writer on long leave it was thought desirable to publish these results at once, with a view to confirmation by others who may wish to try the method.

Summary.

Ionization of the nasal mucous membrane with a 1 per cent. solution of certain drugs, especially alepol, produces in many cases an apparently complete cure of leprotic lesions in this site.

It is particularly effective in otherwise negative cases where infection of the nasal mucosa persists, but even cases which have not yet undergone other treatment react.

The ulcers heal and nasal breathing becomes freer after treatment.

Some of the cases have been consistently negative for two months, which is the longest period that had elapsed between the conclusion of treatment and the writing of this paper.

If these results are confirmed it is clear that in a large number of cases the duration of segregation may be considerably curtailed.

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THE COMBINATION OF ANILINE DYES AND RADIATION IN THE TREATMENT OF TUMOURS.

BY

J. C. MOTTRAM, M.B.LOND., D.P.H.CANTAB.

(From the Research Laboratories, Radium Institute, London.)

ANILINE dyes have been widely used in attempts to cure cancer in the human subject, and various claims have been made. Recently Mr. Frank Coke has been using preparations of the fluorescein series. The best results were obtained with sodium fluorescein, and he is of opinion that better results are obtained by a combination of this drug and hard *x* rays, than with *x* rays alone. The fluorescein was administered by local external application and by the mouth. Mr. Coke suggested to me that possibly some specific fluorescent action might be taking place. The following experiments have, therefore, been carried out to test this idea.

A slow-growing rat sarcoma was used. Small pieces, approximately 1 c.mm., were exposed to gamma radiation from two radium applicators of 110 mg. $RaBr_2 4H_2O$, having an area of 2 by 2 cm. It was found that whereas three hours' exposure *in vitro* killed the tumour cells, exposure for two and a half hours resulted in no more than delayed growth, when inoculated into rats, as shown in Table I.

TABLE I.—*Growth of Slow Sarcoma after Two and a Half Hours' Exposure to Gamma Radiation in vitro.*

	Days after inoculation—								
	5	7	10	12	14	17	19	21	24
Rat 1	5×4	6×5	8×6	10×6	13×8	16×11	18×12	22×16	25×20
Rat 2	3×3	5×4	7×5	11×6	14×7	16×9	19×10	21×13	24×15
Rat 3	o	3×3	5×5	6×6	9×8	12×10	15×10	15×15	23×18
Rat 4	o	o	o	6×4	7×5	8×6	11×7	15×11	21×12
Rat 5	4×4	5×5	6×5	7×6	8×7	10×9	13×12	14×14	19×15
Rat 6	3×3	4×4	4×4	5×5	6×6	7×6	9×7	17×3	17×12
Rat 7	o	o	o	o	5×5	8×6	10×7	10×7	16×9
Rat 8	o	5×5	6×5	11×6	9×8	10×9	12×11	12×12	15×13
Rat 9	4×4	5×4	5×4	5×5	6×5	7×5	8×5	8×7	10×10
Rat 10	o	o	o	o	o	o	6×6	6×6	11×8

In each of the tables the figures represent the size of the tumours in millimetres. o=Small nodule not measurable.

Small pieces were likewise exposed to various concentrations of fluorescein in Locke's solution, and it was found that 1/80 per cent. solution applied for six hours had no decided effect on the rate of growth of the tumours resulting from the inoculations (Table II).

TABLE II.—*Growth of Slow Sarcoma.*

	Days after inoculation—											
	5		7		10		12		14		17	
	C	E	C	E	C	E	C	E	C	E	C	E
Rat 1	o	o	6×5	9×5	10×6	14×6	14×8	20×8	16×10	24×14	19×14	33×18
Rat 2	8×5	o	9×5	6×5	12×7	10×6	14×8	12×7				
Rat 3	o	o	o	o	4×4	8×4	7×5	10×6	10×10	14×11	18×11	20×12

C=Control. E=After six hours' treatment with 1/80 per cent. fluorescein.

To test whether the combination of the two agents exhibited any specific effect, exposures of two and a half hours to gamma radiation, and of five hours to 1/200 per cent. fluorescein, were used. The exposures were made in the following manner:

A. Eighteen pieces for two and a half hours in 1/200 per cent. fluorescein, Locke's solution. Then for two and a half hours in 1/200 per cent. fluorescein, Locke's solution, and exposed to gamma radiation at the same time. Then for two and a half hours in Locke's solution, after washing in Locke's solution to remove the dye.

B. Eighteen pieces for two and a half hours in Locke's solution and exposed to gamma radiation at the same time. Then for five hours in 1/200 per cent. fluorescein, Locke's solution.

C. Eighteen pieces, control, for seven and a half hours in Locke's solution.

A and B, therefore, had precisely the same exposures to gamma radiation and to fluorescein; the only difference was that in A the radiation was applied *after* fluorescein treatment, and in B *before* fluorescein treatment.

The fifty-four pieces of tumour were inoculated into nine rats, six pieces into each rat, and the resulting tumours are shown in Table III. There it is seen that the two

TABLE III.—*Growth of Slow Sarcoma under Conditions given in the Text.*

	Days after inoculation—															
	5			8			11			15			17			
	A.	B.	C.	A.	B.	C.	A.	B.	C.	A.	B.	C.	A.	B.	C.	
Rat 1	—	—	o	—	—	8×7	—	—	12×10	—	—	18×14				
	—	—	o	—	o	—	—	—	—	—	—	—				
Rat 2	—	—	o	—	—	8×8	o	—	12×10	4×4	—	16×14	6×5	—		L.Ts.
	—	—	o	—	—	6×5	o	—	9×9	o	—	14×11	4×4	—		
Rat 3	—	—	o	—	—	7×5	—	—	10×7	—	—	12×9				
	—	—	o	—	—	8×7	—	—	13×9	—	—	15×11				
Rat 4	—	o	o	—	o	7×7	—	o	11×9	—	9×7	L.Ts.	—	13×10		L.Ts.
	—	—	o	—	—	8×7	—	o	12×9	—	3×3		—	5×5		
Rat 5	o	—	o	o	—	7×6	o	—	9×8	6×5	o	13×11	9×9	3×3		16×14
	—	o	—	o	o	—	o	o	—	7×6	o	—	9×9	o		—
Rat 6	—	—	o	—	—	5×5	—	—	8×8	—	—	12×9				
	—	—	o	—	—	5×5	—	—	7×7	—	—	10×9				
Rat 7	—	—	o	—	—	6×5	—	—	8×8	—	—	12×11				
	—	—	o	—	—	4×4	—	—	7×5	—	—	10×9				
Rat 8	—	—	o	—	—	6×5	—	—	9×7	—	—	12×10				
	—	—	o	—	—	4×4	—	—	6×4	—	—	9×8				
Rat 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—
	o	—	o	o	—	o	o	—	4×3	5×5	—	8×6	8×8	—		12×10

L. Ts.=Large tumours. The animals were killed on the seventeenth day.

agents have summated their deleterious action on the tumour cells; alone, neither two and a half hours' gamma radiation nor five hours' fluorescein would have prevented the pieces from growing into tumours.

In A only five tumours resulted from eighteen inoculations, and in B only four tumours. Further, there is no evidence of any specific action; whether the radiation was applied before or after the fluorescein made no difference.

In a previous paper[1] it was shown that the intravenous inoculation of lead colloid into mice bearing tumours, and the simultaneous irradiation of the tumour, caused their disappearance with doses of these agents, which alone

would not produce this result. Here also there was summation, but no evidence of any specific action.

These results, in which more than one agent is brought to bear on a pathological condition, at any rate suggest that the summated action of several agents may be a better form of treatment than the pushing of a single agent to near the limit of the patient's tolerance.

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"DEBILITY" IN CHILDREN AND CYCLICAL VOMITING.*

BY

A. A. OSMAN, M.R.C.P.LOND.,

PHYSICIAN, QUEEN MARY'S HOSPITAL, STRATFORD, E.; SENIOR MEDICAL ASSISTANT, GUY'S HOSPITAL.

ALL physicians are familiar with the large group of children who are brought for advice regarding the most varied symptoms, for which no adequate cause can be found, and yet which do not seem to be directly due to some antecedent illness such as scarlet fever, measles, or tonsillitis. Such children are for the most part labelled "debility," and are either given tonics or sent away to the country or seaside, the unlucky ones having their tonsils removed first. It is this group which forms the bulk of all the cases attending any out-patient department for diseases of children.

The object of the present communication is to show that, although the symptoms for which these children attend are varied, yet the common underlying set of causes are of the same nature as those found in the cyclical vomiting of children; in other words, that the "debility" and cyclical vomiting to be described hereafter may be regarded as the minor and major manifestations of one disorder, bearing to each other much the same relation as petit mal and grand mal in epilepsy. Further, it is desired to emphasize the frequency with which cyclical vomiting occurs in children of all classes, and not only among the well-to-do, as is commonly taught. Finally, it is hoped to show that both the minor and the major forms of this disorder are easily preventable by the same treatment.

In September, 1923, a group of 30 children suffering from attacks of cyclical vomiting was collected, observed, treated, and followed up for the following three years. It was then believed that this disorder was rare in children of the hospital class, but it soon became evident that this was not the case. On two separate occasions a census of such cases was taken in the out-patient departments of two London hospitals, and it was found that approximately 30 per cent. of all children over 2 years of age gave a history of typical attacks. Since then it has become apparent that cyclical vomiting in children of the social class that makes use of hospital out-patient departments is so frequent that it is regarded by the parents as a normal accompaniment of childhood. They regard it as a "bilious attack" attributable to indiscretions of diet, and do not as a rule consider it sufficiently important to require medical attention. Probably for these reasons, and because attacks rarely occur in children already in institutions, it has been regarded by the profession as an infrequent condition in hospital class children.

Early in the investigation an attempt was made to study the conditions in the blood and urine before, during, and after the attacks. At first several cases were admitted to hospital, but in none of them did attacks supervene. It therefore became obvious that in-patient observations of this disorder were impracticable, and the cases under observation attended as out-patients at fortnightly intervals. After some months it was noticed that, though new cases of cyclical vomiting were seen, none of those already under observation had further attacks, though no special treatment had been undertaken. In order to secure regular attendance malt extract had been given to all the cases as a placebo; but on further investigation it was found that it was the malt which was preventing the occurrence of attacks, and that sugar in other forms had a similar result. Thereafter all children with this complaint were given extra sugar as a routine, with the result that in the great majority of over 200 cases treated the attacks have been entirely prevented.

It is now well known that the whole subject of cyclical vomiting is intimately related to that of ketosis. Frew[1] in 1911 showed that acetonuria was present in 61.2 per cent. of 662 children admitted to hospital for various reasons. It was first shown by Marfan[2] that attacks of cyclical vomiting were regularly accompanied by excess of ketone bodies in the urine. Gamble, Ross, and Tisdall[3] state that the amount of acidosis present (reduction of serum bicarbonate of blood) is fully accounted for by the excess of ketone bodies in the blood. Ross and Josephs in 1924[4] produced attacks of cyclical vomiting in children by starvation, and from a study of the blood sugar under these conditions suggested that hypoglycaemia was probably an essential feature of the attacks. Brown and Graham[5] in 1926 also studied the blood sugar, plasma bicarbonate, and ketone bodies in the blood and urine of children given a ketogenic (high fat and low carbohydrate) and an anti-ketogenic (high carbohydrate and low fat) diet, and also the effects of treating the resulting ketosis with sugar, alkalis, and alkalis *plus* sugar. They concluded that sugar was the most useful method of treatment. Investigations on the children forming the subject of this paper show that, at least in many cases, there is not a progressive fall of blood sugar culminating in an attack. On the contrary, the blood sugar often remains normal right up to and during the early stages of the attack, though later it may fall quite suddenly to a very low figure, though not necessarily with any increase in the symptoms present. These facts, together with the knowledge that the prophylactic administration of sugar usually prevents attacks, suggests that the underlying defect is a too rapid depletion of the glycogen reserves of the liver in the circumstances existing at the time. To understand how this glycogen depletion is brought about it will first be necessary to consider the symptomatology of the condition, and then the predisposing and exciting causes.

The cardinal signs and symptoms of cyclical vomiting are extraordinarily constant. They are lassitude, drowsiness, headache, pyrexia, vomiting, and marked muscular prostration. Abdominal pain is frequently complained of, even before vomiting sets in, and constipation is generally present, though diarrhoea accompanies the vomiting in some cases. Pyrexia is invariably present at the outset, and often reaches 103° F. on the first day. In the complete absence of pyrexia cyclical vomiting is unlikely to be the correct diagnosis. The muscular prostration may be extreme, with transient squints, loss of knee-jerks, and carination of the abdomen. In such a case drowsiness may give place to actual coma, and not infrequently there is a mild jaundice with pale-coloured stools. The urine is as a rule acid, scanty, high-coloured, and contains an excess of acetone bodies. Often the attacks are preceded by a prodromal stage lasting from a few hours to a day, with lassitude, anorexia, and headache. Sometimes a sense of chilliness or actual shivering precedes the attack. The vomiting is persistent, and is brought on by the mere sight of food. The vomited material is usually acid, and is often highly coloured with bile. The attacks generally last two or three days and then gradually and spontaneously remit, leaving the child after a few days in normal health. Attacks usually begin at about 3 or 4 years of age, and continue at regular or irregular intervals until 12 or 13 years of age, when they tend to become less frequent and less severe, and by the time of puberty they have generally ceased altogether. Sometimes at puberty the attacks are replaced by symptoms of migraine. In some instances cyclical vomiting commences in infancy, though usually in an atypical form.

It is well recognized that cyclical vomiting only occurs in children with an inherited or acquired nervous instability. On examining the causes which excite the actual attacks it is found that they fall into three main groups, of which the first is by far the most important. They are: (1) mental excitement, such as occurs when attending parties, during examinations, and so forth; (2) infection accompanied by

* Part of this work was carried out with the aid of a grant from the Medical Research Council.

pyrexia, as at the onset of scarlet fever, tonsillitis, and "colds"; (3) muscular over-exertion, as after vigorous games in which there is a competitive element. Hilliger[6] has suggested that all these causes act by the over-production of adrenaline through sympathetic stimulation. The signs and symptoms, the nature of the predisposing and exciting causes, and the readiness with which the attacks can be prevented by the addition of extra sugar to the diet, can all be satisfactorily explained by such an hypothesis. It is common knowledge that most healthy children prefer sugar and "sweets" and dislike fats. This may be readily understood when it is remembered that the child always works on the "all-out" principle, while the adult, with greater cerebral inhibition, has learnt to conserve energy by the highly co-ordinated use of a few muscle groups. The child's need for relatively larger supplies of a readily combustible and assimilable food such as sugar is therefore much greater. The monosaccharides and disaccharides are necessary for sudden demands when glycogen stores are getting low. There can be no doubt that the child's desire for sugar and "sweets" subserves a valuable physiological function, and should be gratified.

Treatment.

The amount of sugar to be given varies in every case and in different circumstances. Thus a child who remains free from attacks on a certain allowance of sugar will require an extra supply before attending a party, or going for a ride, or being subjected to any other stimulus known to cause attacks. The following rules have been successful in a large number of cases, and may be of value as a rough guide. Apparently one form of sugar is as effective as another. At least two level teaspoonfuls of sugar are given in a cup of weak tea for breakfast and tea. For dinner, lemonade sweetened with sugar is given. Sandwiches of bread-and-butter and Demerara sugar are taken at each meal, and in some cases an extra sandwich for supper. Milk is allowed in the tea, and in milk puddings, but is not recommended as a beverage, though if desired it may be taken after being skimmed. Glucose powder, 2 or 3 drachms, is given in lemonade three times a day between meals, or, when this is not possible, the child is allowed and even encouraged to eat sweets (boiled sweets are excellent) instead. The extra glass of milk often provided in the mornings is forbidden, and often the school authorities are informed that the child should be allowed to eat sweets in school. As a result of such measures no untoward results have been encountered at any time during the past five years. Glycosuria has never been found in any of these patients. Occasionally during the first fortnight of such a diet urticaria has been complained of, but without exception it has proved quite transitory, and cleared up without any modification of the treatment. Giving sugar and sweets between meals does not impair the appetite in the majority of cases.

"DEBILITY" AND SUGAR SHORTAGE.

The term "debility" covers that large group of children who, though not suffering from any recognizable disease, are nevertheless persistently or temporarily in a subnormal state of health. They may seek advice for headache, constipation, listlessness, anaemia (pallor), backwardness, incipient tuberculosis, failure to put on weight, loss of appetite, growing pains, pyrexia, recurrent diarrhoea or colitis, "nervousness," night terrors, nocturnal enuresis, asthma, and cough. This group of symptoms, when not obviously associated with or due to some definite and well-recognized disease, occurs almost exclusively in highly strung nervous children. Acetone bodies are frequently found in the urine of many of these children. Their plasma bicarbonate is subject to much wider variations from the normal than that of children with a stable nervous system, and many of them suffer from persistent acidosis (deceased plasma bicarbonate), of which the exact cause has not yet been determined. The blood sugar, on the average, is not lower than in normal children, and is again subject to greater fluctuations. The conclusion appears to be justified that this great group of children, commonly called debilitated, is really suffering from relative or absolute insufficiency of sugar—that, in fact, it is suffering from a minor form of the disorder called cyclical vomiting. It is not suggested that the symptoms named are necessarily due to shortage of sugar. That they are frequently due to such shortage, however, is shown by the fact that very often they can be cured and prevented by the simple expedient of adding sugar to the diet. Broadly speaking, these minor symptoms are more frequently the manifestations of sugar shortage in younger children; as age increases the symptoms tend to become aggregated into definite major attacks with normal health in the intervening periods. At a later age, again, the major attacks become less frequent, and less severe, and ultimately cease altogether. The predisposing nervous instability may persist throughout life, but during the adult period increased cerebral inhibition exerts some measure of control over the biochemical responses to outside influence. In this connexion it is significant that with increasing age fluctuations in the amounts of many of the normal chemical constituents of the blood become progressively less marked.

Some Common Symptoms.

A detailed consideration of a few common symptoms may serve to illustrate some of the points already made, and perhaps throw some light on the nature of certain complaints frequently met with in paediatric practice.

Sugar shortage, in the sense already considered, would appear to be by far the most common cause of headache and constipation in children, both symptoms, in the majority of cases, yielding readily to extra allowances of sugar. The constipation is probably only an expression of defective tone of the intestinal musculature.

Abdominal pain, with and without obvious constipation, often clears up with sugar treatment. Major attacks of cyclical vomiting are also generally accompanied by abdominal pain, often in the right iliac fossa, and occasionally with tenderness and rigidity. Not infrequently children are seen who have undergone appendicectomy for such symptoms, but with attacks persisting until prophylactic treatment with sugar is instituted. In many cases the differential diagnosis between recurrent appendicitis and cyclical vomiting is quite impossible. Sometimes sugar given by the mouth, or as a 5 per cent. solution of glucose per rectum, produces such rapid amelioration of symptoms as to render postponement of operation reasonably safe. In recurrent cases of abdominal pain simulating appendicitis extra sugar in the diet should always be tried before resorting to operation. The point is of great importance, because the child subject to cyclical vomiting is especially liable to delayed chloroform poisoning.

The common symptoms of early tuberculous infection in children are lassitude, failure to put on weight, pallor, and anorexia. Large numbers of children are diagnosed as tuberculous on these criteria and without evidence of any local lesion. A considerable number of these children never develop active tuberculosis, and not infrequently all the symptoms subside when extra sugar is given.

"Growing pains" are commonly regarded as having a rheumatic origin, or as indicating a predisposition to acute rheumatism. But in many instances these pains may be due to abnormal stresses resulting from the faulty attitudes adopted by children with poor muscle tone. Quite often these pains disappear when the muscle tone is improved by means of an increased allowance of sugar. "Growing pains," it would appear, are more often related to poor muscle tone than to acute or subacute rheumatism, though this view is contrary to that of Goodhart and Still.

The only other single symptom which calls for detailed discussion is unexplained continued pyrexia. Quite commonly children retain a considerable degree of pyrexia, often without other symptoms, long after the apparent subsidence of an acute illness. Sugar treatment may be followed by an immediate and permanent return of normal temperature. The pyrexia in these cases may represent a continued variety of the pyrexia of shorter duration which invariably accompanies major attacks of cyclical vomiting. More than one child has been confined to bed for several months at a time for this reason alone. The following case will illustrate this point.

A boy, aged 7, was admitted to hospital on July 27th, 1927, for unexplained pyrexia, possibly due to tuberculosis. It was not known for how long pyrexia had been present, but it was discovered three weeks previously by his doctor. There was a history

of lassitude, headaches, and constipation for about two months. There was no family history of tuberculosis, and no signs or symptoms of this disease could be discovered in the child. A radiograph of the lungs showed nothing abnormal. He had never suffered from "bilious attacks," and was an only child. As will be seen from the accompanying chart, the temperature became

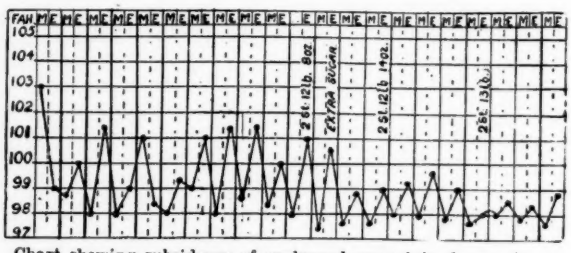

Chart showing subsidence of prolonged unexplained pyrexia on administration of sugar.

normal almost immediately after giving extra sugar (3 drachms of glucose powder in lemonade three times a day). It will be seen also that he at once began to gain in weight. Since then he has attended as an out-patient at intervals, and now (October, 1928) he is apparently in normal health, having had no further symptoms. During the whole of this period he has continued to take glucose.

The following conclusions would appear to be justified.

1. Cyclical vomiting is an extremely common affection in children of all classes.

2. It is due to depletion of the glycogen reserves of the liver.

3. It occurs mainly in "nervous" children, attacks usually being precipitated by mental stress.

4. It can generally be prevented by giving extra sugar in the diet.

5. The child's desire for sweets subserves a physiological function, and should be gratified.

6. A large proportion of cases of "debility" is due also to sugar shortage.

7. Such debility can generally be cured and prevented by increasing the allowance of sugar in the diet.

8. Sugar shortage is the most common cause of headaches, constipation, abdominal pains, and "growing pains" in children.

POSTSCRIPT.

Since writing the above I have read a paper on "The pre-rheumatic child," by Professor C. W. Vining of Leeds (Bath Conference on Rheumatic Disorders, 1928). In it he shows that a very large proportion of frankly rheumatic children give a preceding history of various symptoms of minor ill health, lasting for months or years. He groups these symptoms under the heading of "toxic debility," and shows that their incidence is very much less in normal children. This state of "toxic debility," Professor Vining suggests, is intimately and causally related to the incidence of acute rheumatic fever, and he concludes that "the success of our efforts to prevent and control rheumatism (acute) will be in proportion to the amount of recognition we give to the pre-rheumatic health defect, and I would suggest on the evidence brought forward in this paper that prevention lies first and foremost in the provision of a well-balanced diet from infancy onwards." The symptoms Professor Vining includes under the title of the "pre-rheumatic" state are identical with those I have suggested as being due to a relative insufficiency of sugar in the diet. As, moreover, they may be readily cured and prevented in the majority of cases by the addition of sugar to the diet, it is possible that this dietetic modification affords a means of preventing acute rheumatism, or at least of diminishing its frequency.

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SUDDEN DEATH FROM PNEUMONIA WITHOUT APPARENT SYMPTOMS.

BY

JAMES A. STEPHEN, M.B., D.P.H.,

CHILD WELFARE MEDICAL OFFICER, ABERDEEN;

AND

EDWARD R. C. WALKER, M.B., M.R.C.P.ED.

SUDDEN deaths in marasmic infants in the first year of life are not uncommon, especially in the presence of severe anhydraemia. Heart failure, respiratory failure, or what appears to be a sort of general nervous collapse, sometimes brought on by an unsuitable meal, may extinguish suddenly the flickering little life. When the child seems to be doing well and death occurs without any warning symptoms the matter becomes very puzzling. Such deaths are commonly certified as being due to "marasmus," a term which is inadequate, if not actually inaccurate. The following case of this nature, therefore, seems to us of some importance and interest.

A female infant, born on November 13th, 1927, was admitted to the Burnside Infant Welfare Home, Aberdeen, on December 1st, 1927, weighing 6 lb. 9 oz. She was put on the routine feed for infants of her age—namely, lactic acid milk sweetened with dextri-maltose—but did not gain weight satisfactorily. Little could be made out clinically, except that after a few weeks a pustular eruption developed on the chin. This cleared up fairly readily with a coal-tar and zinc paste. There was no albuminuria. Progress, however, remained unsatisfactory, the gain being only 26 ounces in fifteen weeks. At this point one unit of insulin daily was given subcutaneously, followed by a drachm of glucose by the mouth, a method of treatment which has given some happy results in our hands. In the first week of this treatment the child gained 11 ounces, and in the next 3 ounces, and in every way appeared to be much improved. At 2.20 a.m. on March 25th she was found in her cot just dying. During the week prior to death the temperature, taken morning and evening, varied between 97° and 98.2° F., the pulse between 124 and 130, and the respirations between 22 and 28. The 10 p.m. feed on March 24th was finished as usual; at 1.45 a.m. on March 25th her napkins were changed, and there was no suspicion that anything was amiss. The last dose of insulin was given at 3 p.m. the previous day, nearly twelve hours before death.

At the *post-mortem* examination the lower lobes of both lungs were found to be solid and in the red hepatization stage of lobar pneumonia, microscopical sections showing the alveoli to be filled with red cells and leucocytes. A pure culture of pneumococci was grown from the affected lung substance. In the upper lobes were found scattered patches of broncho-pneumonia. The only other abnormality was a large thymus. The thyroid did not appear to be abnormal in any way. Unfortunately, these glands were not weighed.

Discussion.

The point of immediate interest in connexion with this case is that a sudden, unexpected, and apparently inexplicable death in an infant in the first year of life may be due to pneumonia. Dr. Simonds, in Abt's *Pediatrics* (vol. 8, p. 630), indeed, states that broncho-pneumonia is the most common cause of sudden death in the first year of life. Lobar pneumonia is not mentioned in this connexion. While lobar pneumonia is much less frequent in children under 1 year, and is held by some not to occur at all, our experience, confirmed by clinical, radiological, bacteriological, and pathological findings, is that it does occur, and in the case here recorded the pathological and bacteriological findings were as stated above. Discussing the mechanism of death in these cases, Simonds considers that the fatal result is brought about by toxic absorption from the focus, and, probably chiefly, by asphyxia induced by the great reduction in alveoli, which are small in infancy, available for blood exchange. In our case, if asphyxia were the chief cause of death, it would be necessary to postulate its very sudden onset, for it is difficult to see how a child with any degree of respiratory embarrassment could, without showing some recognizable signs of distress, take a feed of several ounces as this child did four hours before death, at which time the pneumonia must almost certainly have been fairly well established. An overwhelming toxaemia seems to be the more probable explanation. In reviewing the case from birth to necropsy four points stand out—namely, (*a*) the failure to gain weight normally on an adequate diet, arguing a faulty metabolism; (*b*) increase in weight in response to insulin;

(*c*) complete lack of resistance to infection, to the extent of failure to produce symptoms; and (*d*) the presence of a large thymus gland. The sequence of cause and effect may have been as follows. An innate weakness was present of endocrine outfit in particular, probably of thyroid, pituitary, and adrenals, indicated by the response to insulin, which we believe exerts its beneficial effect indirectly through stimulation of pituitary and thyroid; and possibly also by the presence of a large thymus. On account of this deficiency metabolism was faulty and gain in weight was unsatisfactory. Stimulation of the so-called "katabolic" glands by insulin brought about increased metabolic activity with consequent gain in weight. A pneumococcal infection occurred, and the endocrines, probably innately deficient, or perhaps weakened by stimulation, failed along with the autonomic nervous system to respond with defensive activity and consequent production of symptoms, and death occurred. This explanation is in line with that suggested by Ramsay in his interesting paper on "The resistance factor in disease" in the *Journal* of April 14th, 1928 (p. 628).

If this interpretation be approximately true, then it seems possible that another class of case may be rescued from that limbo of infantile diagnosis termed variously "marasmus," "wasting," "debility," and "athrepsia"; and, if this be a correct conception of the pathology of these cases, therapeusis based on it should hold out hopes of their more successful treatment. The rational procedure would appear to be to supplement the deficient glands by giving reliable glandular extracts, and concurrently, or probably later, to stimulate them by some such method as insulin injections.

Summary.

A case of sudden death in an infant of 4 months, from pneumonia which produced no symptoms, is reported. It is suggested that these cases are commoner than is supposed, and also that the underlying pathology is concerned with an innately deficient endocrine system. Treatment based on the latter supposition is proposed.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SPREADING SUBCUTANEOUS EMPHYSEMA AFTER FRACTURE OF RIB.

THE following case is of special interest since it illustrates an effective treatment of spreading subcutaneous emphysema following the fracture of a rib; two instances of this condition were recently published in the *British Medical Journal* by Mr. J. A. C. Macewen (November 17th, 1928, p. 892). The patient in the present case left the wards of the Albert Dock Hospital towards the end of December.

A dock labourer, aged 54, was admitted on October 5th, 1928, after having fallen 15 feet into the hold of a ship, together with a heavy wooden hatch, which fell across his chest. There was fracture of the seventh left rib in the posterior axillary line, with a small patch of emphysema over the site of fracture. On the succeeding days the emphysema spread rapidly as follows: October 5th: A circular patch about 6 inches in diameter. October 6th: Left scapular and both pectoral regions. October 8th: Left axilla and upper arm, left supraclavicular fossa. October 9th, 10 a.m.: Chest wall emphysematous throughout, with spread to the left side of the abdominal wall, the left arm down to the wrist, and the right arm down to the elbow. 6 p.m.: Emphysema covered both arms to the wrists, the entire surface of the body, and both legs to the knees. There was a sudden spread to the neck and face, up to the supraorbital ridges; the whole face was now uniformly spherical with the eyelids ballooned and standing out from the general level, giving an appearance not unlike that of two golf-balls on the surface of a football. 7 p.m.: "Eggshell" crackling could be felt in the finger-tips and nail beds, and respiration was becoming so seriously embarrassed that tracheotomy was contemplated. Acting on a suggestion by Mr. T. Pomfret Kilner, surgeon to the hospital, pleural puncture by a medium-sized trocar and cannula was performed on the affected side, permitting free ingress and egress of air, with partial collapse of the lung.

The theory advanced for this treatment was that the continuous increase of emphysema was due to escape of air by way of the pleural cavity into the subcutaneous tissues under pressure; if, then air were allowed to pass freely out of the pleural space this pressure would cease to operate.

There was no further spread of the emphysema, and after twelve hours the cannula was removed, respiration being less embarrassed. Recovery was uneventful, the emphysema passing off in the reverse order of its appearance; on October 25th there was none present.

It would appear from this experience that so simple an expedient as pleural puncture at an opportune moment would avert the necessity for the accepted treatment by multiple incisions in situations where the subcutaneous tissues are distended.

Albert Dock Hospital, London, E. ROBERT V. GOODLIFFE, M.R.C.S., L.R.C.P.

AN UNUSUAL CASE OF HYPERKERATOSIS BLENNORRHAGICA.

CERTAIN uncommon characteristics would seem to render this case of hyperkeratosis blennorrhagica worthy of record.

A patient contracted gonorrhoea in August, 1924; he was ill for seven days, and had no complications. He was reinfected in December, 1927; there were no complications, and he was discharged cured after forty days' treatment. He was readmitted to the Royal Naval Hospital, Haslar, with gonorrhoea on March 1st, 1928; there were no complications, and he was discharged cured on April 9th.

The patient was readmitted to the Royal Naval Hospital, Haslar, on August 24th with well-marked hyperkeratosis blennorrhagica of both feet only. He stated that two months prior to admission to hospital he noticed dried skin appearing in different places, first on the right heel, secondly on the left heel, then spreading over the soles and toes, and becoming gradually more painful on pressure, especially while standing on guard. He finally was put on light duty on account of inability to perform his work.

It is stated by most authorities that the following three symptoms constitute the syndrome: gonorrhoeal urethritis, gonococcal arthritis, and hyperkeratosis. The point of interest is that the above patient has never had any form of joint trouble whatsoever since his first infection with the gonococcus in 1924, and no joint trouble has been present up to the time of his discharge "cured" from hospital on September 26th. Secondly, the patient had not noticed any urethral discharge prior to readmission to hospital on August 24th, and none has been present since.

Examination of a urethral smear after prostatic massage on August 27th, 1928, revealed a few Gram-positive organisms, together with an occasional pus and epithelial cell. Urine cultures on August 28th and September 11th were sterile, and a urethral smear on September 10th was negative. A urethroscope examination was negative, and the prostate was normal. The patient was a fit, healthy man in every other respect.

We have had four cases of hyperkeratosis in this hospital during the last two years; three patients had urethritis, and arthritis in conjunction.

In the present case hyperkeratosis was the only symptom, and probably the infection of March, 1928, could be held responsible for this. The point of interest is that if such a disease as gonorrhoeal iritis can occur ten years or more after initial infection, and appear as the only metastatic exhibition, is it not possible that hyperkeratosis may appear as the sole manifestation also?

The treatment applied was purely local—namely, alkaline foot baths and nikalgin ointment.

T. R. LLOYD JONES,
Royal Naval Hospital, Haslar. Surgeon Commander, R.N.

INJECTION TREATMENT OF VARICOSE VEINS.

I RECENTLY had a difficult case of varicose veins to deal with, and the satisfactory sequel to a change of procedure may justify its publication.

The internal saphenous was very bad, with nine large nodules from the internal condyle upwards, the lower leg being like a fisherman's net with veins of varying sizes. I began with a 0.5 c.cm. dose quinine urethane, and for the space of five weeks increased the dose until I gave three 1 c.cm. injections at the one sitting. The first injections were given at the upper end of the vein, and the later ones at the lower; all were given slowly and cautiously, and none had any effect. I decided, therefore, to adopt different tactics.

I thoroughly prepared the nodule at the internal condyle, emptied it, and kept it empty by digital pressure. I then partially dilated it by injecting forcibly 2.5 c.cm. of quinine urethane. This was kept in the nodule for thirty seconds and then the leg was lowered for thirty seconds, the patient standing on it; after this the leg was elevated for one minute, and then the patient was instructed to walk about. The result was sclerosis of the meshwork on the leg and of the nodule with two inches of the vein above it and of one other nodule. A week later I gave a similar injection half-way up the thigh, and after another week had elapsed found no further injection necessary.

The reasons for bringing this case to notice are the large single dose employed; the forceful injection; and finally, the injection in the middle of the vein, which ensured that either centrifugal or centripetal flow would be of equal advantage.

Benbecula, South Uist. S. BARTLETT.

LARGE URETHRAL CALCULUS.

THE following case is of so unusual a nature that it is deemed worthy of being placed on record.

A joiner, aged 54, was admitted to the Royal Infirmary, Glasgow, in June, 1928, complaining of the presence of a hard mass in the scrotum, and inability to pass urine per urethram. He stated that he first had difficulty in passing urine five years previously, and that he then had frequency also, necessitating his getting up during the night to pass water. Then a painful swelling developed at the base of the penis, which ultimately discharged urine. Many similar swellings developed subsequently. He denied gonorrhoea, and the Wassermann reaction was negative.

On examination eleven sinuses were found on the scrotum, two of which were discharging pus, and one urine. Condylomatous-like masses were present around the anus, one of which was discharging pus. Lying under the scrotum, in the middle line, a large, hard, irregular mass was felt, fixed to the deeper tissues of the perineum, but not to the pelvis. The inguinal glands were palpable on both sides. The patient had a right inguinal hernia. The urethra was found to be quite impermeable beyond the penile portion. A vertical incision was therefore made in the middle line of the scrotum down on to the hard mass, which was found to consist of a stone, chiefly phosphatic, occupying the dilated urethra, immediately proximal to the complete obliteration met by bougies when examining. The stone weighed 45 grams, and measured 5.25 by 3.5 cm. Beyond the stone the urethra was fully permeable up to the bladder.

Cultures taken from the pus yielded coliform organisms, Gram-positive cocci, and diphtheroid bacilli, but no gonococci.

The patient made an uneventful and satisfactory recovery.

J. MACEWEN,
Surgeon, Royal Infirmary, Glasgow.

ERYTHEMA NODOSUM.

IT may be of interest, following the review of the monograph by Dr. Odery Symes in the *British Medical Journal* of December 29th, 1928 (p. 1180), to report three cases of erythema nodosum which have occurred at this institution during the last two months. It would lead one to suspect that there may be an infective element present in the production of the disease. The two cases of definite erythema nodosum appeared in a class of eighteen patients who were kept apart from the other 1,200 cases in the institution. One nurse, who is in attendance on this special class, has also been under treatment during the last two months for the disease.

The first patient, an idiot girl, aged 13, had an attack of erythema nodosum in May, 1927, which lasted six weeks; node-like swellings were present on both legs. The lesions started on the left leg and later attacked the right one; finally the thighs, buttocks, and arms were affected. The girl has just recovered from another attack which started on November 3rd, 1928; one large patch about the size of a pigeon's egg was present on the extensor aspect of the left leg. The attack was milder and of shorter duration than the former one.

An imbecile boy, aged 11, who had signs suggesting tuberculosis of the lungs, complained of pains in his legs, and was sent to bed on December 18th, 1928, suffering from erythema nodosum. The lesions were first observed in the right leg, and the nodal swellings appeared later on the left one; no indurated areas were visible on the arms or scapular regions.

A nurse, aged 20, complained of pain and aching in the legs, arms, and back on December 18th, 1928; she also had malaise, and there was a tendency to constipation. The indurated patches were first seen on the thighs and buttocks as reddish spots; they later spread to her legs and arms. The attack was acute but of short duration, and she was able to get up on December 25th.

ROBERT MUNRO, M.B., Ch.B.,
Assistant Medical Superintendent, Royal Eastern Counties Institution, Colchester.

Reports of Societies.

POST-OPERATIVE THROMBOSIS.

ON January 18th, with Dr. J. S. FAIRBAIRN in the chair, the Sections of Pathology, Surgery, and Obstetrics of the Royal Society of Medicine combined for a discussion on "Post-operative thrombosis."

Dr. W. HOWEL EVANS discussed the changes in the blood after operation, and in other conditions associated with thrombosis and embolism, in particular parturition, fractures of bones, and acute generalized infections such as pneumonia. Such changes in the blood were only one aspect of a many-sided problem. He devoted himself principally to the question of blood platelets, and gave a series of fifty cases of surgical operations, minor and major, in most of which the platelet count before operation was within normal limits, and, following operation, rose to a maximum by the tenth day, returning to normal within another ten days. The rise began to be marked after an interval of four to six days. The average increase for the whole series was 60 per cent., but while a number—chiefly the trivial cases—showed little or no rise, the major cases showed sometimes a rise of 100 to 150 per cent. A similar sequence was observed after parturition, but in five cases in which Caesarean section was done the platelets began to rise more quickly, and showed an average increase of 200 per cent. During the febrile period of pneumonia the platelets were usually diminished, but following the crisis they began to rise. The platelet reaction appeared, from control observations, to be independent of mere loss of blood, or of confinement to bed, or of anaesthesia, or sepsis. The only apparent common factor of the demonstrated blood changes was tissue injury and the absorption of breakdown products. Such injury was inseparable from surgical procedures, and the blood changes might be regarded as a physiological response.

Mr. D. H. PATEY said that four manifestations of post-operative thrombosis were met with—namely, localized thrombosis, massive pulmonary embolism, minor pulmonary embolism, and latent thrombosis. The first two types were most easily studied, as they were the most readily diagnosed. In considering thrombokinase absorption theories, he described experiments reproducing conditions of tissue juice absorption, which might be presumed to take place in man after operation, and as all these experiments were negative he concluded that this type of theory could not be supported on experimental facts at present. He discussed the role of anatomical and pathological variations in the veins, and in passing said that certain investigations of his own went to negative the idea that the sitting-up position after operation was a factor in the production of post-operative thrombosis by causing kinking and possibly traumatism of the femoral vein. Dr. Howel Evans's work on platelets was a definite advance towards knowledge of the subject, though to establish the theory firmly collateral evidence was required—first, unequivocal proof that splenectomy (following which the platelet rise was most marked) was specially liable to be followed by thrombosis, and secondly, experimental verification. The stasis aspect of the question offered at present the most hopeful side for attack. Measures directed towards the tone of the abdominal wall were much more likely to be successful than efforts to induce movement of an inhibited diaphragm.

Mr. VICTOR BONNEY dealt with three theories of the process. In favour of the bacterial theory was the fact that thrombosis which was obvious either by the clot being palpable or by visible signs of venous blockage was always preceded by fever and local pain. Cases of pulmonary embolism did not usually exhibit these symptoms prior to embolism, though pain and fever occurred afterwards. Embolism was rare when there was prior evidence of thrombosis, suggesting that clots due to, or accompanied by, definite signs of phlebitis were too firmly anchored in the vein to shift easily. Thrombosis, if bacterial, bore no relation, however, to the degree of sepsis in the operation area, being commoner after "clean" operations, such as hysterectomy and shortening of round ligaments, than after operations on pyosalpinx or suppurative appendicitis. The second or toxic theory was unlikely, because there was no knowledge of any toxaemic conditions whose lesions exhibited anomalous distribution; thrombosis was always limited to veins of the lower half of the body, chiefly the legs, and usually the left leg. Toxaemic lesions were generalized. The third theory was that of a haemic process. Little was known about the conditions of increase of the clotting power of blood, but in haemophilia, in which the reverse was the case, lesions were generalized. The balance of evidence was in favour of a bacterial process, but there were difficulties. Thrombosis was far commoner after operations involving the peritoneal cavity, and this was against the theory of a septicaemic lesion, since septicaemia was no more common after operations on the peritoneal cavity than after operations elsewhere. Thrombosis was rare after operations to the uterus via the vagina, seeming to suggest that trauma to the uterus was not a sufficient cause unless there was also trauma to the peritoneum, but against this deduction was post-parturitional

thrombosis. The preference for the left leg pointed to the lesion being due to local infection, but left leg thrombosis occurred after right-sided operations, so that the route of infection was probably not through veins or lymphatics connecting directly with the leg. The period at which symptoms appeared—from the tenth day onwards—was significant: in ordinary infections symptoms appeared in two or three days. Therefore the organism probably did not belong to the group of ordinary septic organisms, whose incubation period was short. It was possible that post-operative thrombosis was due to anaerobic spore infection from the patient's own bowel. *B. coli* appeared in urine after all abdominal sections; organisms, coming from the bowel, found entrance to the urinary tract via the kidney, and probably across the peritoneal cavity. If so, the peritoneal cavity contained free organisms, and these, after operation, might enter the leg by lymphatic conduction. The anatomical relations of the parts on the left side might favour such transmission more than on the right. This would explain why the peritoneal cavity was so often a factor in the sequence leading up to thrombosis, and why the left side was more frequently affected. Such a suggestion, however, failed to explain leg thrombosis after operations on parts like the breast and vagina.

Mr. J. P. LOCKHART-MUMMERY said that this problem was entirely a physiological one, and would never be solved until a great deal more was understood about intravascular clotting. Post-operative thrombosis was far commoner after abdominal operations than after any other kind of operation, and this was due to interference with the abdominal wall. The common period for the occurrence of the post-operative infarct was about the tenth day. The actual thrombus occurred immediately after operation, but by the tenth day the intravascular clot softened and began to move. Mere stasis of blood within the vein did not cause intravascular clotting. Such clotting also did not occur in normal blood. The factors required were stasis *plus* something else, and what that "something else" was remained doubtful; it might be excessive blood platelets or thrombokinase. To some extent stasis in the vein could be prevented, and this appeared to be the only method available at present for averting post-operative infarct.

Dr. F. J. MCCANN said that in the vast majority of these cases the cause was some error of technique on the part of the surgeon or some mistake in after-treatment. It had been said that something must be done to bring the abdominal wall to the diaphragm. What could be done was to diminish the pain which the patient suffered in the abdominal wall. A stitch tied very tightly caused agony, and had an extraordinary influence on diaphragmatic contraction. If the abdominal wall was stitched carefully and the stitches were brought together without constriction, and if haemorrhage was carefully arrested, the patient should have very little pain indeed. One important error was to tie "chunks of tissue" with thick material. The idea surely should be to pick out the isolated vessels and tie them with thin material. In after-treatment the great point was movement from the first. Patients should be allowed to lie in any position they wished provided they were comfortable. Knee pillows should be thrown away. He let patients get up on the seventh day, before the stitches were removed. The contraction of the muscle promoted healing. As a consequence of these precautions, during the last twenty-five years he had not had a single case of pulmonary embolism, either in his hospital or private practice.

Mr. CECIL ROWNTREE said that all surgeons would congratulate Dr. McCann on the great success which had attended his surgical endeavours, although the points he had mentioned were familiar to most surgeons of experience, and they all endeavoured to follow them. It was true, of course, that thrombosis, when it occurred, usually followed operations, but occasionally it followed normal labour. In his experience pulmonary embolism had always been entirely unexpected. If, therefore, a patient was unfortunate enough to get an obvious femoral thrombosis, he felt quite happy about the case, being sure that pulmonary embolism would not ensue. A possible explanation of the occurrence was a mechanical one. There was a marginal clot, coming from the iliac vein, and "waggling about" in the blood stream, becoming detached at some moment and getting into the pulmonary artery. He mentioned some curious cases, which might have been coincidence, or, on the other hand, might have some significance. For example, in two small hospitals at which he had operated for some years, and in which the conditions, at least so far as he was concerned, were exactly the same, a number of these sequels had occurred at one, and none at all at the other. He was trying to discover what differences there might be in nursing, feeding, and so forth.

In some further discussion Dr. TOM HARE gave an account of the examination of the blood of some lambing ewes, in which the platelets followed much the same course after parturition as Dr. Howel Evans had described in the case of human blood. The increase above the normal count reached 140 per cent. Mr. DAVID LEVI exhibited a substance called "heparin," prepared in America, injection of which into blood was said to stop clotting. Dr. W. CRAMER entered into a discussion on the difference between intravascular clotting and thrombosis. Fibrin, he said, was formed by the blood platelets disintegrating, which was an entirely different process from agglutination. Miss FRANCES IVENS had found thrombosis much more likely to occur in pregnancy toxaemias, where organisms were present in large numbers in the urine.

Dr. HOWEL EVANS, in reply, took up the point made by Mr. Patey as to the operation of splenectomy, saying that there was some connexion between splenectomy and thrombosis, though he did not think the whole story was yet forthcoming. He had not brought forward the platelet theory as elucidating the problem, but only as one factor.

EPIPHYSEAL INJURIES OF THE WRIST-JOINT.

AT a meeting of the Section of Electro-Therapeutics of the Royal Society of Medicine on January 18th Mr. C. THURSTAN HOLLAND read a paper on epiphyseal injuries at the wrist.

Mr. Thurstan Holland commenced with a short reference to the development of the bones at the wrist-joint from the point of view of the ossification of the carpal bones and the epiphyses; he pointed out the importance of accurate knowledge as regards this in considering radiographs of this region for the diagnosis of injury. He then commented on the statistics in Poland's book on epiphyseal injuries. A comparison was made between these statistics and those which it was now possible to obtain from *x*-ray examinations; and it was remarked that *x* rays here, as in most other fields of *x*-ray observation, had been revolutionary. Poland's statistics, largely drawn from *post-mortem* examination and what must have been somewhat uncertain clinical diagnoses, were shown to be obviously unreliable as a guide to the relative frequency of different epiphyseal injuries. Following this, an analysis was made of injuries to the lower parts of the radius and ulna within two inches of the wrist-joint, as seen in the *x*-ray department of the Liverpool Children's Hospital over a period of seven years, the age limit being 12 years. The statistics showed quite plainly that a backward displacement of the lower radial epiphysis, simple or complicated by other injuries, was by far the commonest lesion, and that, practically, it took the place in children of the Colles fracture in the adult, being brought about by the same kind of trauma. A true Colles fracture under the age of 12 was very rare; Mr. Holland had seen only one case. After this introduction there followed the main part of the paper—namely, the *x*-ray diagnosis of these injuries, and the exact meaning of the *x*-ray appearances. It was contended that in nearly all, if not in all, of the cases in which a radial epiphysis was displaced, there was also a diaphyseal injury. This diaphyseal injury was either, and more commonly, (1) a flake of bone torn off the edge of the diaphysis in the direction of the displacement, or (2) a lamella of bone (described by Werenskiold) torn from the surface of the diaphysis opposite to the epiphysis. Mr. Holland referred to the paper by Werenskiold, and gave his reasons for disagreeing with some of that author's conclusions. It was shown that technical care was necessary in the *x*-ray examination to make sure of demonstrating this diaphyseal

injury, but Mr. Holland believed that it did occur in all cases in which the epiphysis was definitely displaced. It became an important *x*-ray point in diagnosis (1) in cases in which only an antero-posterior view had been taken; (2) in those cases in which at the time the *x*-ray picture was taken the epiphysis had either slipped back into its normal position or had been induced by manipulation. If this diaphyseal injury was shown radiographically it could only mean that there had been a displacement of the epiphysis, since it could not occur as an injury by itself.

The paper was illustrated by about thirty radiographs, chosen to demonstrate the various points raised.

THE INJECTION TREATMENT OF VARICOSE VEINS.

AT a meeting of the Forfarshire Medical Association at University College, Dundee, on November 22nd, 1928, with the president, Professor J. A. KYNOCH, in the chair, Mr. JOHN TAYLOR read a paper on the injection treatment of varicose veins.

Mr. Taylor gave first a historical account of the method, and mentioned the various solutions employed; he then went on to consider the kinds of cases suitable for the treatment. In the "hose-pipe" variety the veins were tortuous, with sacculations in the thigh and leg, and involvement of the whole saphenous system; in another variety there were bunches of veins in the leg and commencing affection of the lower thigh. These types were found in both sexes. Another common female type was the parous, where the legs were fat and showed only little venous "pouchings" like strings of beads; and lastly, there was the variety with big saccules. Mr. Taylor said that phlebectasis in the lower limb began in general in the deep veins, and deep varices were more common than superficial. He called attention to the fact that Sir Benjamin Brodie's observation of eighty years ago that the venous flow in the saphenous system was reversed when the valves were incompetent had been confirmed by lipiodol injections and *x*-ray examinations. It followed that an embolus would have a tendency to be directed distally and not upwards towards the saphenous opening. In his own clinic he had frequently been able to demonstrate not only that the flow was directed distally in the valveless saphena, but that in some cases it continued so against gravity when the limb was elevated to an angle of 30 degrees. After injection one of three things might happen. In the ideal case the vein walls adhered at once, with immediate and permanent obliteration of the channel. This reaction occurred in various degrees, the least of which was a condition of gradual thrombosis taking three to four days, but with good functional and cosmetic results. Secondly, there might be an extensive reaction in both directions from the site of puncture, with sudden clotting and the ultimate formation of a fibrous cord which might take months to disappear. Thirdly, there might be no reaction at all, but when the injection was repeated a week later an extensive reaction might follow. With regard to leakage it had to be remembered that contractile power in the wall of the dilated vein was lost to such an extent that there was no chance of immediate and complete sealing of the puncture. The injection was rapidly diluted, and it appeared that the solution passed rapidly into the general circulation, for some of the patients tasted quinine a few moments after the injection. Mr. Taylor described how he tried to empty the veins when injecting; the patient had thus to be in the recumbent position; he had always failed to produce clotting in a normal vein with the usual doses. Further information was required concerning the detailed pathological changes in the intima of varicose veins and the reasons why reactions to equal doses in similar cases were so varied, apart from the rate of dilution and rate of injection. He insisted that the injection treatment of varicose veins was not simply the injection of a sclerosing agent into any varicose vein that came under observation. Bad results were undoubtedly occurring, and it was only by an understanding of the conditions and experience of the method that they could diminish therapeutic errors and prevent this treatment from falling into undeserved disrepute.

ULTRA-VIOLET MICROSCOPY.

AT the annual meeting of the Royal Microscopical Society on January 16th Mr. J. E. BARNARD, F.R.S., delivered his presidential address on the subject of microscopy with the aid of ultra-violet radiations, and gave a full description of the construction and manipulation of the elaborate apparatus necessary for this purpose.

Mr. Barnard mentioned that only three outfits of the kind he described were in existence; one was at the Rockefeller Institute in New York, another was at the Imperial College of Science, and the third was in his own laboratory in the institution of the Medical Research Council at Mill Hill. On one occasion he had transported the outfit for the purpose of demonstration, and it was a week before it could be got back into working order; he had resolved never again to remove it from its bed. The first difficulty in ultra-violet microscopy arose from the comparative scarcity of the materials which could be employed; these had to be natural, for artificial glasses and the like were at present of no real service. The first material was quartz, which could be obtained in the crystalline or the fused state. The crystalline form was variable—it might be coloured or colourless, and frequently disclosed impurities such as iron—but fused quartz was still more difficult to use on account of its lack of homogeneity. Another material, fluorite, might be quite useless owing to its fluorescence. In ultra-violet work the objectives were made from fused quartz, the slide on which the object was placed was crystalline quartz, and the cover glass was of fused quartz again. Mr. Barnard said that it would be better, if one could ensure a sufficiently good quartz, to have the slide of fused quartz also, but the difficulties in the way were considerable; the specimens had to be flawless, free from internal stresses and strains, and only small pieces usually could be found to meet these conditions. Another difficulty in the ultra-violet as compared with ordinary microscopy was the source of illumination. The ordinary worker with the microscope did not need to concern himself much about his source of light so long as it furnished sufficient good illumination, but in ultra-violet work the objective so far had been corrected for only one wave-length. It was necessary to use a spark spectrum, most generally of cadmium, on account of its bright line in the ultra-violet region. If the magnesium or zinc spectrum could be used it would in some ways be better, but the arrangement of the bands was not so convenient. The visible focusing was done with the aid of a mercury vapour lamp. The necessity for visible focusing, said Mr. Barnard, was one of the great embarrassments in dealing with the virus type of organism, which was so quickly destroyed by light. The visible focusing having been accomplished, an ingenious mechanism permitted a change over from the glass objective to the quartz objective without any dislocation or variation in the position of the image. An urgent necessity was an objective of higher numerical aperture than it was possible to work with at present. All the materials with which his work was done were of a watery consistency, the medium in which the objects were immersed having a refractive index of about 1.4. A numerical aperture of 1.35 would be a real help; the aperture used was about 1.20. Mr. Barnard added that the selection of photographic plates furnished another difficulty. The most rapid plates were not necessarily the best for ultra-violet work, and panchromatic plates, containing as they did a dye, usually fluorescent, were unsuitable. He used an ordinary plate, coated with a thin layer of paraffin oil, which caused a certain amount of brightening of the lines in the shorter wave-lengths of the spectrum. Mr. Barnard exhibited a few typical results, beginning with what Dr. Carpenter, the authority on the microscope, had called the "torment of microscope makers and rival diatom resolvers," the *Amphipleura pellucida*; he showed how the striations were clearly brought out under the ultra-violet method, whereas with the ordinary microscope they were scarcely visible. He also demonstrated the great enhancement in the structure of the image as the result of the ultra-violet method in the case of various micro-organisms. The results in many cases were certainly much more revealing than anything obtainable by transmitted light.

Reviews.

SIR WILLIAM HAMER ON EPIDEMIOLOGY.

A book by Sir WILLIAM HAMER on epidemiology is a literary event. His scholarly equipment, wide practical experience, and literary charm long since secured for him a high place upon the roll which includes the names of Creighton, Payne, and Greenhill. The Anglo-French Library of Medical and Biological Science could hardly have secured a contributor from this side of the channel with more of the intellectual finesse which appeals to our neighbours. Those who are already familiar with Sir William Hamer's papers and official reports may be a little disappointed that his book is not rather more of a unity and rather less of a compilation than it actually is. The phrase "as I said in the year so-and-so" is not an encouraging conversational gambit; it suggests a bore. Few men have less of the bore in them than Sir William Hamer, though he *does* quote himself rather often. But the quotations are very good, and will be new to most French and some English readers. Another general criticism is that, although the book is called *Epidemiology, Old and New*,[1] one could easily find a more appropriate title. Perhaps a contemporary of Sir William's hero would have entitled the book: "Of Catarrhal Epidemicks and Such as be infestuous to the Brain and Nervous Stock; whereunto are added an Anatomy of that most excellent Physician, Thomas Sydenham (*medicus in omne aevum nobilis*), and divers Animadversions glancing at the Schismaticks vulgarly known as Bacteriologists."

A reader who wishes to understand what is, in the reviewer's opinion, Sir William Hamer's principal contribution to knowledge should begin a first reading on page 32 and read straight on to page 102. He should then pass to page 131 and read the next twenty pages, studying the rest of the book afterwards. The sections cited exhibit the historical setting, as Sir George Newman called it, of epidemic influenzas, old and new, in a most attractive and instructive way. Nobody else, save perhaps Creighton or Dr. Crookshank, could have written those pages at all, and nobody else has so clearly illustrated the idea of a *sequence* of epidemic happenings, so well shown that the historical succession of "diseases" is something more than "a tale told by an idiot, full of sound and fury," and does signify something. This is a considerable achievement, more than enough to justify the existence of the book. If, therefore, the remainder of this notice is critical, that is not because the reviewer is blind to Sir William Hamer's great merits, or presumes to put himself upon an equal footing with so learned an epidemiologist. Still, to be quite candid, one feels that Sir William's sparkling manner often covers essentially confused ideas: that, for instance, much of the gospel according to St. Thomas is mythology, and would have moved that eminent physician Dr. Thomas Sydenham, in spite of his austerity, to hearty laughter. As an example one may take Sir William Hamer's reaction to Freind's criticism of his hero. Freind made the point that although Sydenham *said* the fevers, particularly the continued fevers, of his different constitutions were essentially different and needed different *treatment*, he did in fact treat them all in the same way, and reference to the fourth chapter of Book I, the third of Book III, and the second of Book V of the *Obs. Med.*, where the treatments of the continued fevers of 1661–64, 1667–69, and 1673–75 are laid down, seems to bear out Freind's remark. If there is a difference it has escaped both the reviewer and Sir William Hamer. For this is the way Sir William meets the criticism. He observes that the criticism gives expression to *the* difficulty, that which again and again troubled Sydenham himself. He goes on to say that in the dedicatory epistle to the third edition of *Obs. Med.* Sydenham expressly mentioned that his growing experience of fevers had shown him that in thinking, in earlier days, that he could forge "a Delphic sword, in the shape of some *methodus medendi*, which should meet all cases" he had been wrong. This reply is, surely, a classical example of *ignoratio elenchi*. The very point of Freind's criticism is that Sydenham's quite dogmatic statement (which Freind quotes) about the fevers of different constitutions requiring utterly different treatments is inserted (according to Greenhill) for the first time in the edition of 1676, but Sydenham does *not* give in this latest edition any indication of how he varied his treatment. Since nobody supposes that Sydenham, who was a great physician, would conceal an important rule of practice, Freind, like a sensible man, concluded that Sydenham's speculations about epidemic constitutions did not influence his conduct as a practitioner of medicine. It might perhaps be added that when Sydenham changed his opinion as to the epidemiological nature of the winter fever of 1679—a matter to which Sir William Hamer devotes much praise—he did not change his treatment. His recommendation in the postscript to the tractate on dropsy, when he thought the fever was an intercurrent, is identically the same with his recommendation in the monitory schedule when he had satisfied himself that it was a genuine "stationary fever."

There is, of course, an answer to Freind's criticism, but it is an answer which Sir William Hamer, in the role of hagiologist, is estopped from giving—namely, that in the famous Section 3 of Chapter II, Book I, of the 1676 edition of *Obs. Med.* Sydenham is displaying a confusion of thought. Surely fevers might be epidemiologically distinct and yet clinically identical. Water-borne typhoid and fly-borne typhoid are epidemiologically different, but the clinical treatment of the *patients* might well be the same. One could give many other instances of what seems illogical reasoning—for instance, the whimsical notion that the discovery of ultramicroscopical viruses is, in some mysterious way, a point against bacteriologists—but it would be ungrateful to end upon a discordant note. It may be that Sir William has found more genius and prescience in Thomas Sydenham than were really there, but respect for the mighty dead is not so common an attitude that we can afford to speak lightly of it. *Maxima reverentia*, no doubt, *debetur pueris*. But it will do the *pueri* no harm to see that a man who has played a great part in the sanitary administration of London of the twentieth century loves and reverences as his master a London practitioner of medicine who actually moved and had his being before even the Medical Department of the Privy Council came into existence.

M. G.

[1] *Epidemiology, Old and New.* By Sir William Hamer, M.D., F.R.C.P. The Anglo-French Library of Medical and Biological Science. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1928. (5¼ × 8½, pp. x + 180; illustrated. 9s. net.)

FEVER, CLIMATE, AND HORMONES.

It is a trite observation that the avenues to knowledge are strange and not to be predicted. We ask of Nature a definite question, and how often she answers by asking another! The obstinate inquirer who will not be deflected from his chosen path is dismayed, but happy is he who is content to give experiment its head. *Fever, Heat Regulation, Climate, and the Thyroid-Adrenal Apparatus*[2] is the embracing title of a volume in which Dr. W. CRAMER describes his investigations over many years along paths which may be traced back to an intended inquiry into the problem of cancer. The goal he set up was not attained, but the author's peregrinations were not mere idling. They led him to some definite and quite fascinating conclusions upon the diverse subjects indicated in the title.

Dr. Cramer's thesis may be briefly summarized: "With the exception of respiration, all the factors concerned in the heat regulation of warm-blooded animals are under the direct control of the sympathetic nervous system, and, therefore, subject to control by the functional activity of the thyroid and adrenal glands." The sympathetic system controls heat production through its effects upon metabolism, while it controls heat loss by the opposed effects upon the cutaneous vessels and the sweat glands. It follows that stimulation of the sympathetic by increasing heat production and restricting its dissipation produces a type of fever. It is argued that the stimulation of the thyroid-adrenal apparatus by toxins may be the physiological basis for the fevers of bacterial origin. The argument extends

[2] *Fever, Heat Regulation, Climate, and the Thyroid-Adrenal Apparatus.* By W. Cramer, Ph.D., D.Sc., M.R.C.S. London: Longmans, Green and Co., Ltd. 1928. (Med. 8vo, pp. ix + 153; 40 plates, 11 figures. 15s. net.)

to an engaging theory of the effects of climate upon man. A bracing climate invigorates us because it stimulates the sympathetic and the appropriate endocrine organs. In a relaxing atmosphere we are lethargic because this stimulus is lacking. These views have all the merits of compact orderliness. Their place in the body of physiological thought we shall be better able to assess when certain consequences of the theory have been more rigorously explored.

The investigations upon which these views have been based depend to a great degree upon the author's histochemical method for following the functional activity of the adrenal. The principle employed is that of fixing and staining the adrenaline granules in the gland by means of osmic acid vapour. Dr. Cramer believes that this method gives "direct and conclusive evidence of the actual process of secretion of adrenaline from the medulla into the blood stream." Since his argument is chemical it is proper to suggest that what osmic acid identifies is "reducing substances" not, specifically, adrenaline. If it can be established that adrenaline is the only significant constituent of the adrenal medulla which can reduce osmic acid, then the test does become "direct and conclusive." As long as there is doubt the author's interpretation of the histochemical investigations must remain inferential, though it may be highly plausible.

ARCHITECTURE OF THE CEREBRAL CORTEX.

STANDARD works of descriptive histology covering each the same ground will continue to appear and to supersede one another so long as our methods of investigation continually improve. In his monograph on the cellular structure of the cerebral cortex[3] Professor CONSTANTIN VON ECONOMO has given us a shorter account of the results arrived at in his work with Dr. Koskinas embodied in their monumental atlas, of which this is essentially an abridged version, and to which the author intends that it should serve as an introduction. It brings the results of this piece of detailed research within the reach of those, probably the majority, for whom the atlas, with its formidable price of £30, is an unhoped-for possession. This monograph, with its condensed mass of purely descriptive information, depends for its usefulness upon rigid systematization and clearness of outline, and while the former is here found, the latter might well have been more insistently emphasized. Since Baillarger differentiated the transverse section of the cortex into a series of cellular and granular layers many investigators have followed and amplified the work, begun already by Meynert in the sixties, of dividing up the cortex into superficial areas delimited by the characteristic distribution of these underlying layers: Hammarberg, Campbell, Elliot Smith, Brodmann, and many others have contributed to the work in this field, successively dividing and again subdividing the territory until the present author finds no fewer than 109 different areas require individual description. It is obvious that this process of division, based upon careful mensuration of areas and volumes, may be continued indefinitely, and that until the physiology of the cortex has advanced sufficiently for us to interpret and appraise the contribution of anatomists, our knowledge will be furthered rather by the suggestive integration of various functional components than by the analysis of innumerable disconnected elements. This work of analysis seems here as complete as modern microscopic technique applied with inexhaustible patience and unrivalled skill can afford. The task of functional interpretation is left to the physiologist, whose needs will conjure up cortical mechanisms based upon evidence which the more wary anatomist will hesitate to confirm.

An English translation of these lectures by Professor von Economo on the minute anatomy of the cerebral cortex[4] has now been prepared by Dr. S. PARKER for the benefit of the English-speaking medical public, with a short preface by the author. The material is grouped in twelve chapters, with a short bibliography and a comprehensive index. The numerous photomicrographs which accompany the text are very well reproduced on excellent paper.

[3] *Zellaufbau der Grosshirnrinde.* Zehn vorlesen von Dr. Constantin von Economo. Berlin: J. Springer. (Roy. 8vo, pp. xi + 145; 61 figures. R.M.

[4] *The Cytoarchitectonics of the Human Cerebral Cortex.* By Constantin von Economo. Translated by Dr. S. Parker. Oxford Medical Publications. London: Milford, Oxford University Press. 1929. (Roy. 8vo, pp. xii + 186; 61 figures. 21s. net.)

X RAYS IN UROLOGY.

VOLUME VII of *Annals of Roentgenology*,[5] edited by Dr. JAMES T. CASE, is devoted to the subject of urological roentgenology. The authors are Dr. HUGH YOUNG, clinical professor of urology at the Johns Hopkins University, and Dr. CHARLES WATERS, instructor in clinical roentgenology at the same university. In their preface they call attention to the fact that the great progress made in the last ten years in the diagnosis of urinary conditions is to a very considerable extent due to improvements in methods of *x*-ray examination. Previously *x* rays in urology were limited to the diagnosis of calculi. With the introduction of opaque solutions to delineate the contour of the bladder, renal pelvis, ureters, and urethra, vast new possibilities were opened up. The authors' object in writing the present volume is to interest the radiologist in the multiple problems of the urologist and to supply a large number of *x*-ray photographs, with their clinical histories attached, so that radiologists and urologists alike may have a store on which to draw and with which to compare cases coming under their own care. The opening chapter deals with equipment, and especially with different models of combined *x*-ray and cystoscopic tables. In Chapter II an account is given of the topography, anatomy, and physiology of the urinary tract. The remainder of the work is devoted to abnormalities and pathological conditions of the kidneys, ureters, and bladder. At the beginning of each chapter is a brief summary of the pathology of the conditions dealt with, and this is followed by a number of excellent radiograms illustrating these conditions, together with their case-sheets. By this method both surgeon and *x*-ray expert are able to obtain a more intimate knowledge of each other's problems. It is unnecessary to say that drawing, as the authors do, on the resources of the Johns Hopkins University and of the Brady Urological Institute, there is a wealth of material such as is at the disposition of few other writers. Moreover, no expense has been spared in the reproduction of the radiograms. Although the price that must be charged for such a volume will set a limit to the number of buyers, it will undoubtedly be of the greatest use to all surgeons and radiologists dealing extensively with genito-urinary conditions.

METABOLISM OF TUMOURS.

REFERENCE has already been made in these columns (December 11th, 1926, p. 1124) to Professor WARBURG's work on the metabolism of tumours.[6] A translation of the work has been included in the Nouvelle Collection Scientifique, issued by the Libraire Felix Alcan, with the addition of a chapter in which the author gives a summary of his views on the cancer problem. He considers that there is no specific excitant of cancer, and that, among possible causes, micro-organisms are not in a majority. For him the problem is one of cellular physiology, and he approaches it by attempting to distinguish the characteristics of cancerous as compared with normal metabolism. To this end he has compared the differences exhibited by the two tissues in regard to the functions of fermentation and tissue-respiration. He finds that cancerous tissue exhibits the lactic fermentation, while in ordinary circumstances normal tissues do not. Lactic fermentation, however, becomes manifest in the latter under asphyxial conditions, and it is found that the lactic fermentation of cancerous tissue is about ten times more abundant than in resting normal tissue under asphyxial conditions, but is quantitatively identical with that in normal proliferating (embryonic) tissue under those conditions. The characteristic of

[5] *Annals of Roentgenology.* Edited by James T. Case, M.D. Volume VII: Urological Roentgenology. By Hugh H. Young, M.D., and Charles A. Waters, M.D. New York: P. B. Hoeber, Inc. 1928. (8 × 11, pp. xiv + 499; 518 figures, 1 plate. 20 dollars net.)

[6] *Métabolisme Cellulaire et Métabolisme des Tumeurs.* Publiés par Otto Warburg. Traduits par E. Aubel et L. Genevois. Tome i et Tome ii. Nouvelle Collection Scientifique. Paris: F. Alcan. 1928. (Cr. 8vo, Tome i, pp. vii + 233, 2 figures; Tome ii, pp. 217, 25 figures. 30 fr. the two volumes.)

cancerous metabolism, therefore, as regards the two functions in question, is that the tissue-respiration is so far altered that it fails to eliminate the normal ferment action in proliferating cells. Among the agents which have the power of altering the respiration in this elective manner is arsenic, and the following experiments with that agent are cited by Warburg in support of his observations: Carrel treated chicken embryos with arsenic and other poisons, and on injecting them into fowls produced sarcomas; A. Fischer treated a culture of embryo spleen with arsenic, and found that the cells behaved under culture like cancer cells, and on injecting them into fowls produced sarcomas. In both experiments the malignant cells exhibited an intense fermentation. According to Warburg the cause of cancer resides in the anaerobic component of the metabolism of normal cells in process of proliferation, and in the fact that this component is more resistant to lesions than the respiratory component. The proliferative activity of cancer cells thus receives an explanation, but the destructive tendency on the surrounding tissues remains unexplained. Warburg suggests that the lactic acid resulting from the fermentation may perhaps render the tissues more vulnerable.

THE DIAGNOSIS OF SPINAL DISEASE.

THE book of Drs. OUDARD, HESNARD, and COUREAUD, with an introduction by Professor SICARD, on diagnosis in affections of the vertebral column in the adult[7] is highly specialized, for, as its title implies, its 250 pages are devoted to the symptomatology and diagnosis of spinal disease, without any reference to pathology or treatment. The exclusion of disease in children and adolescents narrows the field still more. The authors are officers of the French marine medical service and professors of the naval medical school at Toulon. Professor Sicard of the Necker Hospital in Paris points out that new means of diagnosis have of late years been discovered which to a great extent supersede the tactus eruditus and the experienced eye and mind of the surgeon of past generations. These means are x rays, lumbar and sacral puncture, and analysis of the cerebro-spinal fluid, and injection of lipiodol, followed by radiological examinations with screen and plate. The application of these various measures is fully described, and stress is laid on their importance, somewhat to the neglect of methods that have been proved by time. Epidural as well as intrathecal injections are discussed, and the method of carrying them out described, especially the technique of injection into the lower part of the sacral canal, where there is no risk of injuring nerve trunks. Injuries of vertebrae, such as crush fractures, are dismissed very perfunctorily, the authors' chief interest being evidently in inflammatory and infective affections. Spondylitis from various causes, or supposed causes, osteomyelitis, neoplasms, syphilis, and congenital malformations are briefly discussed, and there is a chapter on spondylitis ankylosans or Leri's disease, and on rhizomelic spondylitis or the Strümpell-Marie disease. There is no index to this book, and the defect is not compensated by the table of contents, which is not at all full, and lacking in some page references.

A NEW TRANSLATION OF "DE MOTU CORDIS."

THE tercentenary of the publication of Harvey's *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus* was celebrated in the United States, as in this country, by special commemorative meetings in a number of the chief medical centres—Philadelphia, New York, Baltimore, and Boston—and now a permanent historical milestone has been erected by Dr. CHAUNCEY D. LEAKE, professor of pharmacology in the University of California, in the form of a new translation[8] of the masterpiece in the language and spirit of the present day. The translation, which is preceded by a facsimile of the original (1628) edition, has been suitably but not excessively supplemented by critical footnotes containing references to biographical details and modern physiological knowledge. In a postscript Professor Leake says that, so far as he can find out, his is the third attempt to translate Harvey's classic into English, the other two being an apparently anonymous effort prefaced by Zachariah Wood of Rotterdam and printed in 1653, and Robert Willis's well-known translation in 1847. In Mr. Geoffrey Keynes's *Bibliography of the Writings of William Harvey, M.D.* (which Professor Leake, writing in June, 1928, would not have seen), there is a note of the translation made in 1832–33 by Dr. Michael Ryan, editor of the London *Medical and Surgical Journal*, in which it appeared. Our readers will remember that the 1653 translation was beautifully reproduced by the Nonesuch Press last year; as Mr. Keynes points out, it included "a poem on the death of the author seven years before he died, a grim, if unintentional, jest which Harvey no doubt knew how to appreciate." The present translation was in the first instance made from the miserably printed Longhine edition of 1697, of which the only copy Mr. Keynes could trace is in the library of the College of Physicians of Philadelphia; subsequently Professor Leake was enabled to collate this with a facsimile of the original edition and so to make corrections in his translation. The text is in good English and the reproduction of the illustrations and the general get-up of the volume are correspondingly satisfactory.

NOTES ON BOOKS.

WE reviewed the first edition of *Gould's Medical Dictionary*[9] in its present form in September, 1926. Its popularity and success is vouched for by the fact that it was sold out five months before this edition could be got ready. The 76,000 words of the first edition have been increased in the second to 83,000, and it has 125 more pages. The publishers properly draw attention to the fact that the tables of micro-organisms have been increased in number from seventeen to sixty-eight, into which all the names have been collected. Other additions are a table of operations, a physician's and veterinarian's dosage table, and a diet table. Were we to attempt to go through the 1,522 pages of this volume in search of corrigenda our notice would hardly be ready in time for the appearance of the next edition. In reviewing the first we mentioned a few entries which we thought needed amendment. We are flattered to find that nearly all our suggestions have been adopted, though Glisson's sling is still absent and love-sickness is still defined as erotomania, and Houston and Allingham still hold the pride of place denied to Paget and Hutchinson. This is a great dictionary of medical terms, in quality as well as quantity. Whether the time has not come, or is not at least approaching, when the burden of the editor, publisher, and reader should be lightened by jettisoning the most ancient and archaic words in the vessel before its successor is launched, must be a question for careful consideration, as is a like problem in our larger public libraries.

In preparing the second edition of his *Physiotherapy in General Practice*,[10] the first edition of which was reviewed in these columns on November 21st, 1925, Dr. E. BELLIS CLAYTON has taken the opportunity to revise the work as a whole, and to enlarge it by including sections on the uses and administration of ultra-violet radiation, radiant heat, diathermy, and other forms of electrical treatment. The work is intended to guide the doctor in the selection of appropriate physiotherapeutic devices, and the masseuse who will administer them under his direction. Treatment by massage, movements, exercises, heat, light, and electricity are described, and some account is given of the indications for their use in diseases of the various systems. The book is clearly written, and on the whole the descriptions of treatment are sufficiently detailed; but the section on ultra-violet radiation would be improved by the inclusion of some account of the conditions contra-indicating its use. The only contraindication mentioned by the author is tuberculosis.

[7] *Le Diagnostic dans les Affections de la Colonne Vertébrale (chez l'adulte).* Par P. Oudard, A. Hesnard, et H. Coureaud. Préface du Professeur Sicard. Paris: Masson et Cie. 1928. (Med. 8vo, pp. 256; 75 figures. 36 fr.)

[8] *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus.* By William Harvey, M.D., with an English Translation and Annotations by Chauncey D. Leake, Professor of Pharmacology, University of California. Tercentennial edition. London: Baillière, Tindall and Cox. 1928. (Roy. 8vo, pp. xii + 228; 10 illustrations. 16s. net.)

[9] *Gould's Medical Dictionary.* By George M. Gould, M.D. Second edition, revised and enlarged. Edited by R. J. E. Scott, B.C.L., M.D. London: H. K. Lewis and Co., Ltd. 1928. (Imp. 8vo, pp. xvi + 1522. 30s. net.)

[10] *Physiotherapy in General Practice.* By E. Bellis Clayton, M.B., B.Ch.Cantab. Second edition. London: Baillière, Tindall and Cox. 1928. (Demy 8vo, pp. x + 231; 50 figures. 12s. 6d. net.)

The seventh edition of Dr. RICHARD SUTTON'S textbook on *Diseases of the Skin*[11] is now before us, and bears convincing testimony to the popularity which it enjoys, more particularly in America. Like other textbooks, it has grown with its subject—to such a size, indeed, that it has been found impossible to contain it within a single volume. Consequently, like other less complicated organisms, it has increased by fission, and there are now two volumes. This is a distinct advantage, and makes the book much easier to handle. Apart from this, all the old excellences and characteristics are maintained. Dr. Sutton and his efficient assistants have brought the present edition well up to date, and we have sought in vain to find some serious omission. The printing, illustrations, and general turn-out are also good.

We have perused a book on *Pharmaceutical and Medical Chemistry*,[12] by SADTLER, COBLENTZ, and HOSTMANN. It contains an introduction to the study of chemistry, and deals chiefly (as the title implies) with drugs and medicaments. It also treats of general chemistry to the usual extent found in books of its kind. This voluminous book contains much information of practical value, some of it presented in a discursive, almost voluble, form, and some of it abrupt, if not fragmentary. The introductory part is not wholly satisfactory; it seems to have been written with more haste to set down facts than to illuminate them. Otherwise the facts are generally adequate for the needs the book is intended to serve, and the volume will be a useful aid in studying the chemistry of drugs.

A somewhat remarkable booklet by Dr. DENIS MULDER, director of the medical *x*-ray institute in Bandoeng (Java), in which the text is in English and in German (each page being divided longitudinally, is entitled *Total X-Fotos*.[13] Essentially it is a plea for long-distance radiography, but the author is not satisfied with the usual three metres used for so-called tele-radiography, and has taken radiographs at distances of from eight to ten metres. Profusely illustrated as it is by *x*-ray photographs of various kinds of things, such as flowers, shells, etc., perhaps the most interesting pictures are those of complete human beings, taken by one exposure on either a single film *plus* intensifying screens, or on a series of films and screens elaborately joined up together. The author is obviously an enthusiast who has spared neither time nor expense, and some of his results are really wonderful, even if not so useful as his enthusiasm leads him to believe. Radiographs of the entire human body—the living body—taken at a distance of ten metres from tube to film, and this without damaging the tube, appear to be unique, and are very interesting.

The Traveller's Pocket Reference[14] to the "XXth Century Health and Pleasure Resorts of Europe" is published by the Anglo-Continental and International Offices, and contains hints to travellers, maps, and information about the chief Continental countries which attract those in search of recreation or better health. It is of a convenient size for the pocket, and includes an up-to-date list of hotels, pensions, schools, and medical establishments. From the same offices also has been received a pamphlet[15] giving an illustrated list of medical and balneological establishments and cure resorts on the Continent.

Among the publications of the Church of England Zenana Missionary Society are stories illustrating medical work in India. *Some Women of Sindh*,[16] by Dr. RUTH WESTERN, describes something of the lives and thoughts of patients admitted into the hospitals at Sukkur and Larkana. Their fatalism is shown by the story of an attempt at general vaccination during a small-pox epidemic. The opinion in the bazaars was: "What is the use of trying to interfere with fate? If it is written that our children will get small-pox, no doubt they will get it; if not, they will escape." A child with convulsions had been treated by the local barber with a strong counter-irritant over a fontanelle. The result was a permanently bald spot; but the parents imputed no blame, for after all "man can only apply treatment, and leave the result to fate." There is pathos in the story of the mother who lost her child through small-pox, and was surprised at the distress of the hospital doctors, who had known the child a long time; she did not expect strangers to care. And the custom by which women have to give the eldest son all that he wants was useful when a small boy insisted on remaining in the hospital, from which his mother wished unwisely to remove him. In Dr. ETHEL BLEAKLEY'S *A Country Doctor in Bengal*[17] the miserable condition of the childless wife or widow in India is emphasized. She attributes many cases of blindness to constant weeping at mournings for the loss of husband and children.

[11] *Diseases of the Skin.* By Richard L. Sutton, M.D., etc. In two volumes. Seventh edition, revised and enlarged. London: H. Kimpton. 1928. (Roy. 8vo, vol. i, pp. 654, 506 figures, 5 plates; vol. ii. pp. 740, 731 figures, 6 plates. 52s. 6d. net the two volumes.)

[12] *Pharmaceutical and Medical Chemistry.* By Samuel P. Sadtler, Ph.D., LL.D., V. Coblentz, Ph.D., F.C.S., and Jeannot Hostmann, Ph.G. Sixth edition, revised and rewritten by Freeman P. Stroup, Ph.M. London: J. B. Lippincott Company. (Med. 8vo, pp. xv + 748; 31 figures. 32s. net.)

[13] *Total X-Fotos.* By Dr. Denis Mulder. Bandoeng, Java, and The Hague, Holland: G. C. T. van Dorp and Co. (9½ × 12½, pp. 61; 38 figures. 7s. 6d.)

[14] *The Traveller's Pocket Reference.* London and Lausanne: Anglo-Continental and International Offices. 1928. (Fcap. 8vo, pp. 198. 1s.)

[15] *XXth Century Health and Pleasure Resorts of Europe.* Part IV: Medical and Balneological Establishments and Cure Resorts on the Continent.

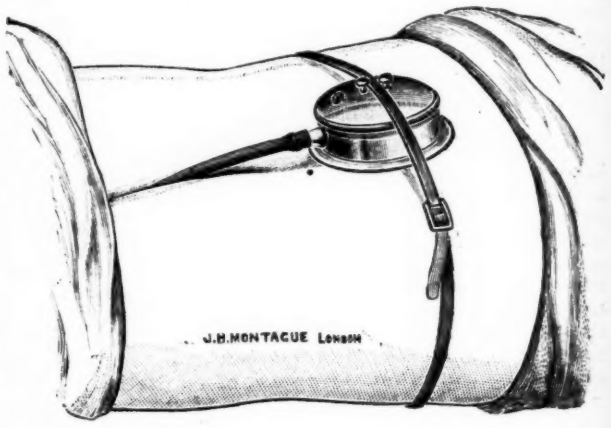
[16] *Some Women of Sindh in Home and Hospital.* By R. H. Western, M.D., B.S. London: Church of England Zenana Missionary Society. 1928. (Cr. 8vo, pp. 155; illustrated. 2s. net.)

[17] *A Country Doctor in Bengal.* By Ethel Bleakley, M.B., Ch.B.Manch. London: Church of England Zenana Missionary Society. 1928. (Cr. 8vo, pp. 72; illustrated. 1s. net.)

PREPARATIONS AND APPLIANCES.

AN IMPROVED BOX FOR USE AFTER SUPRAPUBIC CYSTOTOMY.

MR. SYDNEY G. MACDONALD, F.R.C.S. (London, W.), writes: The new box is an improvement on the old Hamilton Irving box; this is wrong mechanically, consisting as it does of an oval box which has to adjust itself to a convex or concave surface. To this end it is held by four straps, which can never maintain an equal tension, for with each movement the patient



tightens one at the expense of the rest, thus causing displacement of the box and leakage. The new box consists of a section of a sphere fixed at its top central point (by a single band of half-inch elastic) so that pressure is distributed equally to every part of the rim. Thus with every movement of the patient the sphere of the rim adjusts itself mechanically to the convex (or concave) surface of the abdomen. The boxes are made for me by J. H. Montague, 69, New Bond Street, London, W.

A PORTABLE ELECTRO-CARDIOGRAPH.

A portable electro-cardiograph was shown for the first time by the Cambridge Instrument Company, Ltd. (Grosvenor Place, S.W.), at the recent exhibition of the Physical and Optical Societies at South Kensington. It was claimed for this apparatus that its sensitivity was such that the records were comparable with those of the standard Einthoven galvanometer, over which it had the advantage in compactness and lightness. A novel form of camera, daylight loading, is used for taking films, which are wrapped around the cylindrical holes and exposed in three sections in the ordinary way. The operation of the camera and a small automatic time-marker is effected by depressing and releasing a button switch. The time-marker rules a line on the record at each twenty-fifth of a second, and a heavier line at each fifth.

BELTS AND CORSETS.

We have received from Salt and Son, Limited, of Birmingham, a catalogue of their surgical belts and corsets. This firm is one which does not approach the public direct, but advertises only to the medical profession, and makes surgical appliances to the prescription of the practitioner. A feature of the catalogue is the excellent descriptive illustrations, which are designed to bring out the points on which the makers desire precise information and measurement in the prescriptions forwarded. A large range of supports for abdominal and other conditions is provided.

THE *X*-RAY DARK-ROOM.

In our review of the trade exhibition at the Cardiff Annual Meeting we drew special attention to the "Metalix" portable *x*-ray apparatus shown by Philips Lamps, Ltd. (Charing Cross Road, W.C.), which was one of the outstanding exhibits. We have now received a pamphlet containing details of the necessary equipment to enable the radiologist using this tube to carry out the development of his own *x*-ray films with the minimum of trouble.

A NEW SALICYLIC ESTER.

We are asked to state that the new salicylic ester—"S.E.D." (Morson)—to which reference was made by Dr. A. Gordon Watson on December 22nd, 1928 (p. 1143), may be had from Messrs. Steele and Marsh, chemists, 6, Milsom Street, Bath.

British Medical Journal.

SATURDAY, JANUARY 26TH, 1929.

MILK AND THE RATE OF GROWTH OF CHILDREN.

ABOUT a year ago there was published in the *British Medical Journal*, and discussed in a leading article, a report on the influence of milk on the rate of growth of school children. This report, which was prepared by Dr. J. B. Orr, chairman of the Research Committee of the Scottish Milk and Health Association, set forth the results of an investigation carried out at the instance of a committee under the chairmanship of Sir Leslie Mackenzie of the Scottish Board of Health, the cost of the inquiry being defrayed by a grant made by the Empire Marketing Board to the Rowett Research Institute, Aberdeen. At the time of issue the preliminary nature of this report was emphasized, since it had been determined to repeat the tests before formulating a definite opinion. Nevertheless, the data emerging appeared to Dr. Orr to warrant a forecast that at the close of the further series of investigations it would be found, when all checks had been applied, that there were adequate grounds for the conclusion that the addition of milk to the dietary of school children leads to a greater rate of growth, as manifested by an increase of height and weight; that this increase is accompanied by an improvement in the general condition of the children; and that separated milk has a high efficiency as a growth-producing food.

A second preliminary report on the subject, made on this occasion, in the absence of Dr. Orr abroad, by Dr. Gerald Leighton, now of the Department of Health for Scotland, contains an account of the further tests which have been employed. The full text, with tables, appeared in our issue of January 5th at page 23. The total number of children investigated was 1,425. The centres at which the tests were made were Peterhead, Aberdeen, Dundee, Edinburgh, Glasgow, Greenock, and Belfast; the ages of the subjects were 13 to 14, 9 to 10, and 6 to 7. At each centre the children were placed in four groups, of which the first received whole milk, the second separated milk, and the third a biscuit ration of the caloric value of the separated milk. The fourth group had no addition to its diet, and acted as a control. The daily milk ration was one pint for the ages 13 to 14 and 9 to 10, and three-quarters of a pint for the age 6 to 7. At two of the centres the whole milk was certified, and at the remainder pasteurized. The separated milk was machine-skimmed. The period of the inquiry was from November, 1927, to June, 1928. Milk samples were tested at the Rowett Research Institute. The average fat content of the whole milk was 3.85 per cent., of the separated milk 0.33 per cent. At all age groups jointly the milk-rationed children—taking the whole-milk and the separated-milk groups together—increased in height by an average of 1.4585 inches, and the non-milk-rationed children by an average of 1.1810 inches, giving a difference in favour of the milk-rationed children of 0.2775 inch. The milk-rationed children increased in weight by an average of 3.5776 lb., and the non-milk-rationed by an average of 2.4610 lb., a difference in favour of the milk-rationed children of 1.1166 lb. These differences in the average increase of height and weight brought out by the further tests were more in favour of the milk-rationed children than the corresponding differences of the earlier report, which were 0.258 inch and 0.643 lb., mainly, it would appear, on account of the fact that in the earlier report the average increase of height and weight of the non-milk-rationed were relatively larger. It seems rather a pity that in the report percentages have been introduced with the view of interpreting these differences; they may convey to the mind of the casual reader an exaggerated impression of the magnitude of the quantities. Contrasting the four dietetic groups with one another under the three age periods it is seen that in every case the milk-rationed children are ahead of the biscuit-rationed and the controls. The greatest increase of height was found in the 6 to 7 year milk-rationed group. The greatest increase of weight was in the 13 to 14 year separated-milk group.

An outstanding feature of the second preliminary report is the test carried out in order to ascertain the effect of reversing the position of certain groups of the earlier inquiry. The following examples indicate the method and the results obtained. A group of 5 to 6 year children, who in 1927 received separated milk, with an average height increase of 1.500 inch and an average weight increase of 2.407 lb., were put on biscuits in 1928. Their height increase fell to 1.351 inch and their weight increase to 2.212 lb. Another group of 5 to 6 year children, who in 1927 had biscuits, with an average height increase of 1.101 inch and an average weight increase of 2.234 lb., were put on separated milk in 1928. Their height increase rose to 1.454 inch and their weight increase to 2.237 lb. In addition to changes for the better, like the above, which can be measured and weighed, the milk-rationed children improved in condition. The report states that they acquired a sleek appearance, that their hair was glossy, their nails were smooth, and their spirits high. Teachers and janitors found them more difficult to manage than the biscuit-fed and the control cases; this agrees with the observation in the leading article of a year ago that the aggressive races of the world have usually been milk consumers.

The second report bears out the forecast made in its predecessor, strengthening the claims of milk to be accounted a primary factor in the nutrition and growth of children. Much administrative effort is focused to-day on producing a cleaner milk; the problem of securing a more copious use of milk, especially by children, is of even greater importance. The clean milk movement is self-commended and merits cordial support, but it is no disparagement to suggest that more disease may be occasioned by the lack of milk than by the consumption of milk that is lacking in cleanliness.

AMERICAN IDEALS IN MEDICAL EDUCATION.

IN North America, where last year no fewer than 11,000 individuals tried to become medical students, the keen interest in medical education took practical form in the establishment in 1925 of a carefully chosen commission on this subject, under the chairmanship of President A. Lawrence Lowell of Harvard. The Commission issued its first report in 1927, of which a notice appeared in the *Journal* of May 28th, 1927 (p. 979), and it now provides, free of charge to those interested in these educational problems, a third but not final report.[1] This deals with the three divisions of pre-medical education, the teaching of the medical sciences (physics, chemistry, biology, human anatomy,

[1] *Third Report of the Commission on Medical Education.* Pp. 70, October, 1928. Office, 215, Whitney Avenue, New Haven, Conn.

and physiology), and clinical training, for each of which a special committee was appointed. The report is divided into two parts, and has several appendixes. In the first part the principles underlying these various branches are set out, and in the second part each subject is further discussed and amplified; in order to save time and repetition the two parts will be briefly considered together.

With the changing opinion attendant on progress and investigation of the problem, medical education is in America rapidly becoming recognized as one of the most important forms of higher education, and not an isolated problem of professional training. Further, the conception of the right line of general education is to encourage independent thought, individuality, and self-development. As even with a four-years college course a student may find it difficult to satisfy the specific requirements of the best medical schools, and at the same time to secure a good general education, it is important that the medical schools should not require from the entrants more than a grounding in the fundamentals of physics, chemistry, and biology. The instruction in these basic sciences provided in the college courses is not, however, always that best adapted for the future medical student. Much of the inorganic chemistry thus has commercial applications, a large part of organic chemistry is concerned with dyes and similar industries, physics is closely connected with engineering, and biology is not specially taught in its relation to the human organism. The laboratory work is regarded by the Commission as excessive, being too much directed to manipulative training at the expense of general principles. Mathematics and the rudiments of psychology are becoming more essential parts of the pre-medical instruction. Emphasis is laid on the axiom that though clinical medicine may not be a science, the basic sciences form not only its foundation but its scaffolding, and again and again the Commission urges the importance of allowing and encouraging students to think for themselves so as to acquire the intellectual equipment necessary for their future independent professional life. Sir Squire Sprigge, in his account of a recent visit to representative medical teaching centres in America, notes "how great a stress is laid in the United States upon the amount of time the student spends upon the various subjects of study, a stress that is entailed by the absence of a general system of examinations as we understand examinations in this country."[2]

The teaching in human anatomy, biochemistry, and physiology is criticized as being too much occupied, in the early stages, with a mass of detail, much of which, the Commission suggests, might be postponed until the student is engaged on neurology, orthopaedics, or other special clinical branches. This change would both shorten the period of preliminary scientific study and help to correlate the scientific and clinical subjects. With regard to this correlation between scientific and clinical instruction, the point is made that this should not be carried to the extent of "spoon-feeding," as one of the most important features in his training is that the student should work out many of these correlations for himself. The essential teaching in pathology, a subject on the borderland between the medical sciences and clinical instruction, is usually correlated with practical medicine by clinico-pathological conferences, and is becoming more experimental as distinguished from purely structural.

Clinical training begins by an extension of the scientific course, and the student should have free time to return to the basic sciences and expand his knowledge of them at the points where they bear directly on clinical problems. The changing character of medical practice in North America cannot be disregarded when considering the most suitable arrangement of the clinical training. We confess to some surprise in hearing that as many as 40 per cent. of recent graduates specialize, half of these without any experience at all of general practice; it is therefore highly desirable that a broad, comprehensive education and a resident appointment should be provided. More than once in the course of this report the Commission insists that the unit of medical and clinical study is the patient and not the disease, and that the student should accordingly gain an insight into the social, psychological, economic, and other aspects of human life and its environment. It is satisfactory to gather that the generally accepted opinion favours post-graduate training for specialists. Like Sir George Newman, the Commission considers that the ideal of preventive medicine should permeate teaching during the whole period of clinical instruction; but at present ordinary medical teachers, even if they are alive to this duty, are scarcely fitted to undertake it, and until this is altered there seems small prospect of instilling into the student's mind the much-needed general idea that prevention is a real and daily duty of the practitioner of medicine.

This report shows the deep and thoughtful interest taken in the difficult problems of medical education by the medical teachers of the United States. Among the points most prominently brought out are the Commissioners' anxiety to avoid the mass production of standardized medical men and women, and the stress they lay on securing individual treatment for all medical students and encouraging their self-development in every way possible.

[2] *Lancet*, Supplement, January 5th, 1929.

PARATYPHOID BACILLI IN SEWAGE.

THE task of tracking down the source of infection in an epidemic of intestinal disease may perhaps be simplified in the future. Dr. Allan Gray, whose paper appears at p. 142, has shown that it is possible for the bacteriologist to isolate paratyphoid bacilli from sewage, and has succeeded in proving the presence of these bacteria in some tributary sewers and their absence in others. He has not carried his investigations far enough to discover the source of the pathogenic germs, but probably they were derived from a carrier in a locality from which the sewer drained. In the event of an outbreak of paratyphoid fever in a large community with a water-carriage system of sewage disposal it might be possible to localize the source of the infection by systematic bacteriological examination of leading sewers and their tributaries. Of course, in considering the significance of the paratyphoid-enteritidis group of bacilli, disease of animals as well as of man must be kept in mind. In this large and not very clearly defined group of bacilli there are some which cause disease in man only, others in animals only, and some in both man and animals. There are, however, refinements in bacteriological technique which allow these different types to be distinguished in most cases. There is nothing surprising in the announcement that paratyphoid bacilli are present in sewage, since it is likely that a carrier or two of paratyphoid lurks in every community. What is surprising is that Dr. Gray should have succeeded in separating out the pathogenic germs from the host of non-pathogenic. This achievement points to a useful advance in bacteriological technique, but unfortunately Dr. Gray does not give us sufficient information to decide which is the most profitable method to adopt in the search

for paratyphoid bacilli. His results seem to have been rather inconsistent, perhaps owing to the irregular distribution of paratyphoid bacilli in the material he was studying. It is to be hoped that if he pursues his investigations and gains a larger experience he will be able to give more definite guidance on this point. The presence of typhoid and paratyphoid bacilli in the underground currents of sewage need not cause any such uneasiness as did the recent gas explosions in the underground subways of Holborn. No danger is threatened by these germs provided the sewers are watertight and the sewage disposed of without risking contamination of the water supply. Pathogenic bacteria quickly disappear from sewage. Adapted to a different climate and diet, they quickly drop out of the race when competing with the hardy microscopic population of the sewage farm.

ELECTROCUTION FROM ULTRA-VIOLET RAY LAMP.

A CASE is reported in which a young man was found dead in a bath, with an ultra-violet ray lamp beside him. Death was attributed to shock, and an electrical expert, who examined the lamp at the request of the coroner, gave evidence to the effect that there were five ways in which an electric shock might have been sustained from the apparatus. The deceased had purchased the lamp in order to treat himself for blackheads on the back of the neck, and the makers had supplied a book of instructions. About this book the coroner remarked that it appeared to be a "puff," suggesting that the apparatus would cure every disease that mortal flesh is heir to, and that it gave no adequate warning of the dangers which might attend the use of the lamp when connected to a house current of 230 volts. It was stated that the lamp was of faulty construction, and that the insulating material used in it was very inefficient. In commenting lately on a case of electrocution in the *x*-ray room (December 29th, 1928, p. 1186), we suggested that the time had come when some further legislative action might be taken to ensure that electrical apparatus offered for sale should conform to a certain standard of safety, such is now exacted in the case of many other articles—for example, the cylinders used in storing compressed gases. Nearly all electro-medical apparatus is protected by patent, and it should not be difficult, when specifications are submitted for the granting of a patent, to have these examined with reference to the safety of the proposed device. Another question raised by this unfortunate accident is whether there should not be some kind of control over the sale to the general public of such a dangerous appliance as an ultra-violet ray lamp. We have frequently pointed out the dangers which may follow improper use of these rays. It must be remembered that the mercury vapour lamp produces rays which are absent from the solar spectrum, and to which, therefore, the human body is unaccustomed; these rays have been shown to have a powerful action in setting up chemical changes in the body cells; the nature of these changes has not yet been fully investigated. Sunlight at sea-level contains less than 2 per cent. of ultra-violet light, whereas the Kromayer lamp emits nearly 50 per cent. of such radiation. It is therefore very misleading to assert, as do the makers of some lamps on the market, that such lamps supply sunlight; they emit, as a matter of fact, a different kind of radiation, the effects of which may be very different from those following exposure to the sun. The experience of many workers in the past few years has established ultra-violet radiation as a valuable therapeutic agent; but, like most other methods of treatment, it has its definite indications and contraindications, and its effects depend largely on the technique employed. The subject is much too complicated to be adequately compressed into a booklet given away with every machine sold, or to be understood without special knowledge both of medicine and of electricity. There is, indeed, grave danger of serious harm being done, and a useful method of treatment brought into disrepute, if it is carried out otherwise than under the supervision of persons properly qualified to administer it. In a recent case in France a masseur was prosecuted and fined heavily for giving ultra-violet ray treatment, the court taking the view that he was not qualified to do so except under medical supervision. The French Council of Public Hygiene has declared that such treatment should be given only in hospital services and by specialist physicians, while in the United States the Council of Physical Therapy has drawn attention to the danger of the promiscuous sale of ultra-violet ray lamps to the general public. At the last Annual Meeting of the British Medical Association a strong plea was put forward for the establishment of a register of persons qualified in electrotherapeutics; this would at least afford the public an opportunity of distinguishing between those who have been properly trained to do certain skilled work and that vague and dangerous class of individuals who set out to do similar work without such training. We understand that a move in this direction has already been made.

CONSERVATIVE TREATMENT OF APPENDICITIS IN RURAL AREAS.

"SHOULD the treatment of appendicitis in the country be surgical or medical?" This question, it will be remembered,[1] was raised by Dr. N. Nissen in the journal of the Danish Medical Association, *Ugeskrift for Laeger*, for August 23rd, 1928. His conclusion was, in brief, that in a country district, far from a hospital, it is wiser to keep the patient absolutely quiet in bed, starved, and given periodic doses of morphine, than to send him in a cold and jolting ambulance to a hospital for operation, and he added that during twenty years of practice he had treated some fourscore patients on these lines without a fatality. As was to be expected, his challenge to surgery was not left unanswered, and for the rest of the year the correspondence columns of *Ugeskrift for Laeger* have borne eloquent testimony to the interest, not to say passion, which this topic is capable of arousing. One factor calculated to raise the temperature of this discussion is the interest taken in it by the general public. Denmark is a small and highly civilized country where the layman looks over the shoulder of the doctor as he writes; and, Dr. Nissen's paper being commented on freely in the lay press, the readers thereof were not slow to appreciate its import. One of the correspondents in *Ugeskrift*, an exasperated surgeon, wrote that during the last few days he had seen two patients suffering from well-defined appendicitis, and in need (so he thought) of an operation. They had both asked to be given conservative treatment according to the new system which was capable of curing appendicitis without an operation and without risk. Smiling, they had supported their requests for immunity from operation with the suggestion that a conservative treatment which was feasible in the country might conceivably be so in a town also. This question was the subject of a lively discussion in *Ugeskrift* also in 1910, and when it was debated two years ago in the Medical Society of Copenhagen one speaker, a hospital surgeon, insisted that the doctor who indulged in conservative treatment of appendicitis was guilty of malpractice to such a degree that his *jus practicandi* should be taken from him. One of the contributors to the present discussion points out that since the question was raised in 1910 there has been a tendency to treat many more patients in hospital than formerly. But of the advantages of this tendency he was far from being convinced. While all are agreed as to the comparative

[1] *British Medical Journal*, September 22nd, 1928, p. 540.

safety of an operation *à froid*, the best means to reduce the mortality of appendicitis in the acute stage remained, in his opinion, debatable; and the aspect he wished to emphasize was the psychological one—the influence of the emotions on the peristaltic movements of the gut provoked by fear of an operation. The aid of statistics was, of course, invoked on both sides, but one correspondent argued that it must be considered impossible for general practitioners to combine in producing statistics which will be generally accepted. But is he right? Dr. Nissen's paper has already encouraged two other Danish general practitioners to commit to print the records of their cases of appendicitis treated almost entirely on conservative lines and with remarkably few fatalities. Of the statistics already available one correspondent, a surgeon, quoted those of Reedel and Sahli, showing a mortality of 10 to 13 per cent. for medical treatment. On the other hand, in Sweden, where the efforts of Lennander and Bauer in favour of immediate hospitalization and operative treatment have favoured this procedure to the almost complete exclusion of conservative treatment at home, the combined statistics of all the hospitals have shown a mortality of only 2.5 per cent. The correspondent himself, L. Kraft, had treated in Denmark during the past ten years 1,529 cases of appendicitis on surgical lines with a mortality of 4.6 per cent. (71 deaths). On the other hand, Dr. Nissen, replying to Kraft's statistical attack, carried the war into the enemy's country with the calculation that in about 20 per cent. of all operated cases the appendix proves to be perfectly healthy—an argument which would have little force were anaesthesia *plus* a laparotomy devoid of all danger. In a correspondence such as this it is interesting to note the contrast between the outlook of the country general practitioner and that of the hospital surgeon.

RESTLESSNESS IN INFANCY.

A RESTLESS baby may be suffering from indigestion or from an unfastened safety-pin, and such common causes are generally first considered. At the annual meeting of the American Medical Association last year, however, in a discussion[1] before the section on diseases of children, Dr. Hyman S. Lippman considered restlessness in a much more scientific manner. Restlessness is one of the symptoms of the hypertonic baby who is "hyperactive, fussy, and restless, cries most of the time, vomits considerably, and has frequent loose stools." The cause of this hypertonicity is not known, but it appears that modern views favour either "congenital imbalance of the autonomic nervous system" or some unsettling factor in the post-natal environment, such as feeding or the emotional attitudes of the parents. Lippman has studied a group of 63 infants with an average age of 7 weeks. In this group the gain in weight was less than in a control group of normal children; vomiting and diarrhoea were frequent, and restlessness and crying occurred in 82 per cent. during the day and in 51 per cent. during the night. Holding to the essential nervous origin of these cases, he used atropine almost entirely as his therapeutic agent. The infants were observed, with a few exceptions, for one to two weeks before treatment with atropine was instituted. During this preliminary period various other measures were tried, including change of diet, complementary feedings, temporary removal from the breast, holding the infant over the shoulder to relieve air-swallowing, and keeping the infant in a quiet, darkened room away from visitors. Fifty-nine of the experimental group were then given atropine, beginning with half-drop doses of a 1 in 1,000 solution of atropine sulphate ten minutes before feeding. All precautions were taken to ensure the potency of the drug, and in 44 of the infants definite improvement was noted. In 24 of these the response was so prompt and the relief of symptoms so complete that Dr. Lippman is convinced that the drug acted as a specific. In 9 cases it was decided to check the value of the medication by omitting the drug, and in 7 of these the original symptoms returned, while in the remaining 2 the atropine appeared to have effected a cure. The length of time that the atropine must be used varies for each infant. Five infants were relieved within two or three days, but in most instances it was necessary to give the drug for a week at least, and if no relief had been obtained the dosage was increased. Eleven of the 63 infants failed to show any improvement with the use of atropine, and in these it was believed that other factors were present, of which the most important was air-swallowing due to restlessness while at the breast. Lippman points out that restlessness in infancy often leads to emotional difficulties in the older child, and he stresses the importance of the correct balance of the autonomic nervous system from the earliest days of life. His views command respect, but it also seems important, when concentrating on vagus nerve endings, not to forget the uncomfortable napkin or tight binder.

[1] *Journ. Amer. Med. Assoc.*, December 15th, 1928, p. 1848.

PAIN.

THE symptom of pain, which in clinical medicine and surgery is so important an aid in making a diagnosis, is peculiar in that it cannot be directly observed or measured. No norm exists whereby the pain of one patient may be compared in kind or in severity with that of another; even the existence of pain, except when it is unhappily the datum of one's own consciousness, must be inferred from the presence of concomitant phenomena, which themselves, however, are not pain. Most people know what toothache is like, but who can tell whether his own particular toothache is more or less severe than that of another? It may be argued that the reaction to pain is a trustworthy index of its quality or of its intensity, but one may well question whether the person who makes the greatest fuss is necessarily suffering the most. It used to be said that before the days of surgical anaesthesia in a certain hospital which ministered to people of various races, it was the labouring Irishman and the Jew who made the most noise on the operating table. Neither race was supposed to lack endurance, but it was held that the Hebrew cried out through fear that if he failed to attract full attention he might miss some of the benefits of hospital care; while the Irishman called loudly upon God and the saints, and wept and groaned, because he was an emotional being to whose nature the repression of feeling, whether pleasant or painful, was foreign. Neither was a coward, but the one had learnt the bitter lessons of persecution, and the other lacked adequate psychological inhibitions. Consideration of the moral significance or value of pain—a subject on which a member of our profession, James Hinton, wrote a memorable work, *The Mystery of Pain*—belongs to the domain of metaphysics and theology, but we who are devoted to natural philosophy may well be concerned with pain in its physiological and pathological aspects. It seems obvious that the pain following a breach of continuity or injury to the cutaneous outpost of the body is one of the expedients of a highly evolved protective mechanism. When the epidermis is penetrated and the true skin outraged the cutaneous terminations of protopathic nerves flash out the message of danger, and the consequent reflex muscular action results in the withdrawal and protection of the part from further injury. Here the biological value of painful stimuli to the organism is obvious, but only too often pain, even excruciating and persistent pain, appears to subserve no such protective function. Interesting in this connexion is the pain from

the exposed pulp of a carious tooth. What useful purpose does it serve? It may, and does, stimulate the sufferer to seek the dentist's help, but this expedient was probably not available to Neanderthal man, and was certainly not to the orang-outang. Yet both these creatures suffered from dental caries. Again, what use is a pain in the shoulder-blade to a man with a disordered liver? How does the agony of biliary colic help the sufferer to overcome the obstruction in his gall-duct? How, indeed, was prehistoric man helped by referred pains to obtain relief from the various morbid states associated with them? The teleologist might perhaps argue that the association of pain in a given skin area with disease of a viscus having the same segmental nerve supply is a protective provision, designed to enable the surgeon to arrive at a correct diagnosis. But of what use were such pains in the days before Head demonstrated the connexion between them and disease in deeper organs?

VARIATIONS IN WORK DONE UNDER TUBERCULOSIS SCHEMES.

THE circulation by the Ministry of Health of an analysis (Memo. 131 A/T.) of the work done in 1927 under tuberculosis schemes in England should be of considerable value to local authorities, providing them with standards which will enable them and their officers to estimate the efficiency and economy of the services they provide. It is perhaps unfortunate that the document presents a somewhat forbidding aspect to those who dislike figures, consisting mainly, as it does, of tabular information relating to about 160 local authorities with details, grouped under no fewer than forty-two headings. Before this serried mass of figures many will no doubt quail, but it is to be hoped that at least those directly associated with the administration of tuberculosis schemes will scrutinize the figures relating to their own areas and compare them with others. The value of such compilations is that they furnish opportunities for self-criticism, and enable those engaged in tuberculosis work in one area to form a clear idea of what is being done elsewhere. It is impossible to offer a summary of the matter contained in the memorandum, but a few examples will serve to indicate the nature of the questions it raises. In connexion with dispensary work the table shows that the number of contacts examined by the tuberculosis officer per 100 deaths from tuberculosis was in one county 585 and in another only 23, while for all county councils (excluding London) and joint committees the figure was 104, and for England as a whole 116. Clearly such a wide divergence from the mean as is given by the county figures calls for some explanation; there are evidently very considerable differences in the extent of the service provided. It is possible that both schemes err—one in carrying the practice beyond what is necessary, and therefore being over-costly, and the other in failing to develop an important feature of the work. Possibly, also, differences in local conditions may provide a complete explanation, but on the facts given this does not appear likely. To quote a further example, the number of cases on the dispensary registers per 100 cases on the notification registers at the end of 1927 was 53 for all England; for particular areas the figures range from 15 in a metropolitan borough to 98 in a North of England county borough. These figures show the proportion of the total tuberculous population in each area which was dealt with under the tuberculosis scheme, and here again the differences between one district and another are impressive. Even wider differences are shown in the figures given as an index to the extent of co-ordination in the work of tuberculosis officers and insurance practitioners in the domiciliary treatment of insured persons suffering from tuberculosis. The number of reports received on Form G.P. 36 per 100 patients on domiciliary treatment varied from 0 to 586. In connexion with institutional treatment particulars are given of the number of patients treated (excluding observation cases) per 100 tuberculosis deaths; for all county councils (excluding London) and joint committees the figure is 106, for all county borough councils (except those included in joint committees) it is 137, for London it is 114, and for all England 119. In two areas the proportion is as low as 40, and in one it is as high as 557. It is not suggested that the figures given, or those from which they have been selected, in themselves afford ground for condemning certain local authorities as backward or extravagant, or for praising others as progressive and efficient. The surprising differences in the figures do, however, show conclusively that the development of tuberculosis schemes has been very uneven, and the extent of the variations in the work done makes it equally obvious that in many areas the service is far from complete.

LEPROSY IN MEXICO.

THE Public Health Department of the Republic of Mexico has recently issued a report[1] containing the results of the first census of leprosy to be taken in that country, edited by Dr. Jesús González Urueña, a well-known dermatologist. The statistics are based on the replies received to questionaries sent out to all the medical practitioners throughout Mexico, as well as to the governor of each State. The points on which information was desired were the number of cases in the various States, the character of the disease, and the age, sex, birthplace, present habitation, environment, and civil state of the patients. The results of the inquiry in each of the States are given according to their alphabetical order. It is admitted that the statistics are by no means so complete as they would have been in a more civilized country, partly because out of the 2,756 doctors circularized only 1,406 sent any replies, and partly because some districts were entirely without doctors. The total number of lepers returned amounted to 1,450, or one for every 4,797 inhabitants, a figure probably not reached by any European nation, excepting Norway, with an incidence of one leper for every 4,266 inhabitants, and in America only exceeded by Colombia, Dutch Guiana, and Brazil. The largest number of cases were returned from the State of Jalisco, which contained 202, while Tlaxcala, the smallest of all the States, was the only one entirely free from the disease. In Mexico, as in other countries, leprosy shows a ubiquitous distribution. It is found not only in tropical climates, such as that of Yucatan, but also in temperate and cold zones, such as the Federal District and the States of Guanajuato, Jalisco, Michoacan, and Coahuila. In conclusion, we may add, for the benefit of those not familiar with Spanish, that Dr. Urueña's report contains a coloured map showing the distribution of cases throughout the country.

DANGERS OF COD-LIVER OIL.

THE knowledge widely disseminated among the public of scientific work on nutritional disorders has led to much administration of cod-liver oil without the agency or control of the doctor. Many parents believe that the larger the dose and the longer it is continued the better for the child. The work of Agduhr on the toxic changes produced in experimental animals with doses of cod-liver oil per kilogram of body weight corresponding to or even less than those not infrequently employed for children has already been mentioned in these columns.[2] Following upon this work Dr. N. Malmberg has recently published[3]

[1] *Primer Censo de la Lepra.* Mexico: Departamento de Salubridad Publica. 1927. (Pp. 503.)

[2] *British Medical Journal*, 1928, i. 639.

[3] *Acta Pediatrica*, viii, Fasc. 3, December 22nd, 1928, p. 364.

his findings in two cases of young infants dying after cod-liver oil medication. One of these was a premature baby who from the time of birth until death at the age of 4 months was in a hospital, where the diet and general care were under constant supervision. A weakly child at first, it appeared to thrive for a time, and then died without any obvious or acute symptoms except generalized oedema and debility during the last three weeks of life. It received half a teaspoonful of cod-liver oil twice daily until the age of 6 weeks, and then a teaspoonful twice daily until death. Histological examination of the heart showed atrophy and different forms of degeneration, even to the point of necrosis of the muscular cells. The changes agreed in a striking manner with those experimentally produced in animals by Agduhr, and to check the results Malmberg examined the cardiac muscle of other premature children without finding any such changes. In a second case, also a premature baby, the presence of a spina bifida with paralysis in the lower limbs and incontinence of urine made the outlook hopeless from the start, so cod-liver oil was given in large doses until the death of the child on the sixteenth day of life from urinary tract infection. Histological examination of the heart showed simple atrophy of the muscle cells with areas of sarcolysis and vacuolar degeneration. In both cases it is possible that terminal infection might have been responsible for the striking changes in the heart muscle, but such marked atrophy and even secondary replacement of connective tissue as was present appear to rule out any terminal change of short duration. The prematurity of both infants is also a matter of comment, for Agduhr showed that animals varied greatly in their susceptibility, and it is possible that there may be an intolerance of cod-liver oil in some infants. It is admittedly a difficult matter to determine with any degree of accuracy the minimum dosage of cod-liver oil necessary to prevent rickets in different children, and it is, moreover, uncertain whether the vitamin or something else in the oil is responsible for the pathological changes. Is it possible, for example, that contributing to the toxic symptoms was a ketosis produced by excessive fat feeding, and that similar results might have been obtained by feeding with fats other than cod-liver oil? Dr. A. A. Osman, in a paper on debility in children, published in our present issue (p. 150), suggests that many cases of so-called debility in children are due to ketosis, and curable by adding to the diet adequate quantities of glucose. It would seem to follow that treatment of such cases with cod-liver oil, by tending to increase the ketosis, might exacerbate rather than relieve the existing symptoms. Agduhr suggested from his work that even purified antirachitic extracts of cod-liver oil were not without danger; but the interpretation of his results must remain in doubt until control experiments have been carried out with each of the constituents of cod-liver oil separately. At present, however, the lesson of his experimental findings and the pathological findings in infants reported by Malmberg is that cod-liver oil is a potent substance for good or evil, and that its use as a medicament needs careful supervision.

FERNAND WIDAL.

PROFESSOR FERNAND WIDAL of Paris, whose death was announced in our last issue, was born at Dellys in Algeria on March 9th, 1862, the son of a medical inspector of the French army and director of the health service of the 19th Army Corps. He was educated in Paris, where he gained the gold medal in the examination for the *internat*, and later was awarded the Osiris prize conjointly with the late Professor Chantemesse. He was first appointed professor of pathology, and subsequently, on the death of Professor Dieulafoy in 1911, professor of clinical medicine in the Paris faculty. His discovery of bacterial agglutination and its application to the diagnosis of typhoid fever was published in 1896, and his work on the treatment of Bright's disease in 1906. Since the war he had paid special attention to the study of functional tests of the liver and of asthma, anaphylaxis, and kindred subjects. He was author of articles on infectious diseases in the *Traité de Médecine* of Bouchard and Brissaud (1899), and was co-editor, with Professors G. H. Roger and P. J. Teissier, of a *Nouveau Traité de Médecine*, of which twenty-two volumes have appeared, and to which he contributed, in collaboration with other writers, the articles on typhoid and paratyphoid fevers, affections of the kidneys, and haemoglobinuria. Professor Widal was elected a member of the Académie de Médecine in 1906, and of the Académie des Sciences in 1919, honorary Fellow of the Royal Society of Medicine in 1921, and foreign member of the Royal Swedish Academy of Medicine in 1922.

THE Metropolitan Counties Branch of the British Medical Association has arranged a meeting, to be held at the British Medical Association House, Tavistock Square, W.C.1, on Friday, February 15th, to which all fourth and fifth year medical students and recently qualified medical practitioners are invited. Tea and coffee will be served at 5 p.m., and at 5.30 Dr. Ronald Cove-Smith will give an address entitled "Some gaps in the medical curriculum and how we can fill them."

THE KING'S ILLNESS.

IF last week we could write with some optimism of His Majesty's progress, optimism is still more justified now. It is true that in the intervening days there has been no dramatic change in the general condition; rapid improvement was not anticipated, and its absence in no way alters our view that at last a more favourable prognosis may be made. Since December 28th the outstanding fact is that there has not been even a hint of a setback, while every now and then His Majesty's medical advisers have felt themselves justified in recording some slight, though definite, change for the better. When we look back to the period when almost every authoritative medical statement enjoined an anxiety that was only too justified by the critical nature of the illness and the state of the patient, when for days at a time hope was difficult to sustain, we can contemplate the present with deep-felt thankfulness.

We have said that there has been no dramatic improvement in the general condition; but this is true only if one measures the day-to-day increments of improvement. Who, knowing the nature of His Majesty's illness, and aware of the usual prognosis in a general streptococcal infection complicated by broncho-pneumonia and empyema, could have ventured to predict at the onset that in eight or nine weeks the patient would be fit to be moved to the sea coast? One has but to compare the bulletins of to-day with those of a few weeks ago to realize how striking the improvement has been. Only the combination of a sound constitution, the will to live, and perfectly co-ordinated medical care could have achieved this. All danger of setback is not yet over, but we dare to hope that at last the tide has turned definitely in His Majesty's favour, and that the latest measures adopted in his treatment will bring the stage of convalescence appreciably nearer

NINETY-SEVENTH ANNUAL MEETING

of the

British Medical Association,

MANCHESTER, 1929.

THE COLLEGIATE CHURCH, MANCHESTER.

THE ninety-seventh Annual Meeting of the British Medical Association will be held in Manchester next summer under the presidency of Mr. Arthur H. Burgess, F.R.C.S., Professor of Clinical Surgery in the University of Manchester, who will deliver his address to the Association on the evening of Tuesday, July 23rd. The sectional meetings for scientific and clinical work will be held, as usual, on the three following days, the morning sessions being given up to discussions and the reading of papers, and the afternoons to demonstrations. The Annual Representative Meeting, for the transaction of medico-political business, will begin on the previous Friday, July 19th, at 9.30 a.m. The preliminary arrangements for the work of the nineteen Scientific Sections have been made by a special committee, consisting partly of Manchester representatives and partly of members appointed by the Council of the Association. The names of the officers of Sections were given in the *Supplement* of January 12th, and further details of the arrangements for the Annual Meeting will appear in later issues. During the week, and in particular on the last day of the meeting (Saturday, July 27th), there will be excursions to places of interest in the North-West of England. The British Medical Association has met four times at Manchester—in 1836, in 1854, in 1877, and again in 1902. We publish below the second of a series of descriptive and historical notes on Manchester and neighbourhood written for the occasion. The first article appeared on December 1st (p. 1003).

HISTORY OF MANCHESTER.

BY

E. M. BROCKBANK, M.D., F.R.C.P.

MANCHESTER owes its prominence in the industrial world to its position on the slopes of the Pennine Hills as they run towards the western coast and the Atlantic Ocean. Its original situation was at the junction of two rivers, the larger being the Irwell, into which ran the smaller Irk, now entirely hidden by extensive culverting. Both streams arise in the high lands and drain an area of what was once an extensive tract of bog, forest, and waste lands.

There is a high outcrop of red sandstone rock in the angle of the confluence of Irk and Irwell, and it was at this spot that the original settlement was formed, the manor house of Manchester was built, and from which the town subsequently developed. The river angle was further protected by an artificial ditch, traces of which still remain in basements of the buildings over its site. The Manchester Cathedral and the Chetham Hospital and the Grammar School have occupied the angle of the river junction since their foundation. The site was of great importance because of its water supply and because it commanded the agricultural land and roads of the foothills which intervened between the Pennines and the very extensive boggy lands south-west of the town, which constituted what are known as Carrington and Chat Mosses, referred to in Harrison Ainsworth's novel *Guy Fawkes*, which has some of its action in this district, and over which George Stephenson had such difficulty in making a track to bear the Manchester and Liverpool Railway.

CHETHAM'S HOSPITAL AND LIBRARY.

Such a position as that called by them "Mancunium" attracted the Romans because of its defensibility and because it commanded important roads. It was on their direct line of march between their headquarters at Deva (Chester) and Eboracum (York); from it a road ran to Coccium (Wigan), which was on the main Roman north road, just as it is now on the main L.M.S. railway line to Scotland; and another road to Bremetennacum (Ribchester), an important Roman centre in North Lancashire, on the high road from Mancunium to Lugdunvallum (Carlisle). The Roman camp was, however, a mile lower down stream, at the junction of Medlock and Irwell, a district called Alport, again a position well elevated above the rivers. The only trace of the camp now remaining is a small part of a wall, which is protected by the city from further injury. The site of the camp is still known as Castlefield.

The earliest mention of the town in reputable history occurs in the *Anglo-Saxon Chronicle*, 923. When Edward the Elder was reconquering Mercia from the Danes he sent a detachment of troops to Mameceaster to repair and man it. The rock site in the junction of Irk and Irwell was also a desirable place because the Irwell was there fordable by the Sal ford. The expulsion of the Danes forms the subject of one of the Ford Madox Brown panels in the Town Hall, which illustrates some incidents in our history.

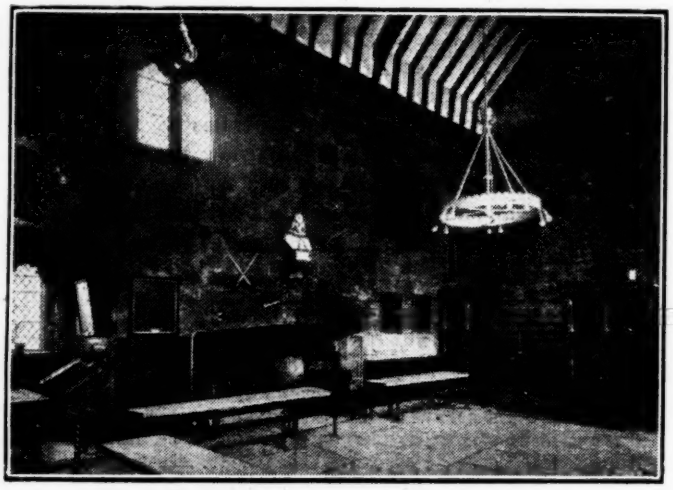
Mameceaster and Salford are referred to briefly in Domesday Book: "King Edward held Salford. There are

three hides and twelve carucates of waste land. There is a forest three leagues long and the same broad. There are many hays [enclosures] and an aerie of hawks there." "The Church of St. Mary and the Church of St. Michael hold in Mameceaster one ploughland free from all burdens save Danegeld." The Church of St. Mary, the earliest church in the neighbourhood, was a wooden building occupying the site of the present Cathedral. St. Michael's Church is at Ashton-under-Lyne, which was then in the parish of Manchester.

A century or two later Manchester is recorded as having aeries of hawks and eagles and a heronry in the woods in the Roman camp district, where, alas! nowadays we can only show rookeries, and treeless ones.

In the days of Edward the Confessor, before Domesday Book time, Manchester formed part of what was then the royal manor of Salford, which was the centre of a great hundred of Salford, 350 miles square, afterwards often called Salfordshire, which composed the whole of the basin of the Irwell and its tributaries. Salford County Court circuit still includes Radcliffe, Bury, Rochdale, Oldham, and Bolton in its jurisdiction. This hundred and other extensive lands between the Mersey and the Ribble were granted as royal demesne to Roger the Poitevin by William the Conqueror.

The township of Salford, though on the right bank of the Irwell, lay in the ecclesiastical parish of Manchester, and before the Crown grant to Roger the Poitevin the King's manor house at Salford had been the civil centre of the district which had St. Mary's Church on the left bank of the river for its ecclesiastical centre. It was in the eleventh century that the town charter was received (and not in the fourteenth century, as my former sketch of the relations of the two towns suggested), and during Roger's tenure that the great part of the parish on left bank of the river, with the exception of Broughton, was cut off from Salford demesne and given as a manor to an under-tenant in return for military service. Roger retained Salford in demesne, and it has since been held by the Sovereign as part of the Duchy of Lancaster. The reigning Sovereign is therefore lord or lady of the manor of Salford, and the Crown is thus toasted in Salford by royal permission. Professor Tait, from whose most interesting work on mediaeval Manchester much of my history is taken (as shamelessly as Homer is said by a soldier critic to have obtained what he thought he might require), says: "Thus a stroke of a Norman baron's pen divorced Manchester and Salford in all but their devotions, and what he sundered no one has been able to bring together again."



DINING HALL, CHETHAM'S HOSPITAL.

Manchester thus became a barony, and the first baron about whom anything definite is known was Albert Grellet, or Gresley, said to be a favourite of Roger the Poitevin. The manor house, as before mentioned, was built on the safe angle of Irk and Irwell junction. Grellet's name appears in Domesday Book as Albertus Greslet. The name Greslet was probably an instance of Norman love for giving distinctive names from some personal appearance, or behaviour, complimentary or otherwise, many of which, as Professor Tait tells us, are to be found in Domesday Book. Some of these were retained as surnames; for instance, "The Fair" became Blount or Blunt, and amongst the Earls of Cheshire, Hugh Lupus (the Wolf) and Randle Gernons (Mustachios). In humbler circles such names as William (not George), who cannot tell a lie (spernens mendacium), appear. Greslet had probably such an origin, and may have meant spotted or pock-marked, or slim of figure.

The Grelleys were absentee landlords, living on their Lincolnshire estate, and the great-grandson of the first Robert married a niece of William Longchamp, Richard I's Chancellor, and Regent during the King's absence. He joined the barons in extorting the Magna Charta from King John, and suffered forfeiture in consequence. However, there was a certain amount of balancing of accounts later, because it was in the Abbey at Swineshead, on the Lincolnshire estates of the Grelleys, that John had his surfeit of peaches and beer which caused his death.

The last of the Grelleys gave a town charter to Manchester in 1301, with power, amongst other things, to elect a burgess to the honourable position as head of the community; it was merely a confirmation of existing privileges. The town adopted the crest of the Grelleys on its armorial bearings. Salford had previously received its charter in 1231. The Grelley line died out in 1311, and the manor rights passed into the possession of relations and others until they were sold in 1596 for £3,500 to Sir Nicholas Mosley, a Manchester man, but a merchant and thrice Lord Mayor of London. The manor rights remained with the Mosleys until 1845, when they were purchased by the Corporation of Manchester for £200,000. Our Mosley Street is a reminder of these lords of the manor.

Thomas de la Warre, who married Joan Grelley and owned the manor, was rector of Manchester. He was much concerned with the inadequacy of the clerical staff in the huge parish covering 350 square miles, so, in 1421, he obtained royal licence to substitute a college of a warden and eight clerical fellows for the rector, and the church became collegiate. The clergy lived for a century on the site of the old Barons Hall, in the building which was subsequently purchased in 1654 by the will of Humphrey Chetham, a Manchester cotton merchant. Chetham then endowed the old hall to become the first public free library in England and as a hospital for the maintenance and education of forty poor boys, a purpose which it still nobly fills in its almost unchanged, mediaeval form. The boys, now numbering one hundred, are still to be seen in their original blue coat costumes.

Another foundation for education in the Irwell–Irk angle adjoining the Chetham Hospital was the Manchester Grammar School. Founded in 1515 by Hugh Oldham, a Manchester man, then Bishop of Exeter, it is one of the oldest public schools in England. Oldham was a close friend of Bishop Foxe of Winchester, and helped him to found Corpus Christi College, Oxford, and provided most of the money for it. He endowed the school as a feeder for the college, and also provided help for boys going from the school to any college at Oxford or Cambridge. Corpus Christi College still has a representative on the board of governors of the school.

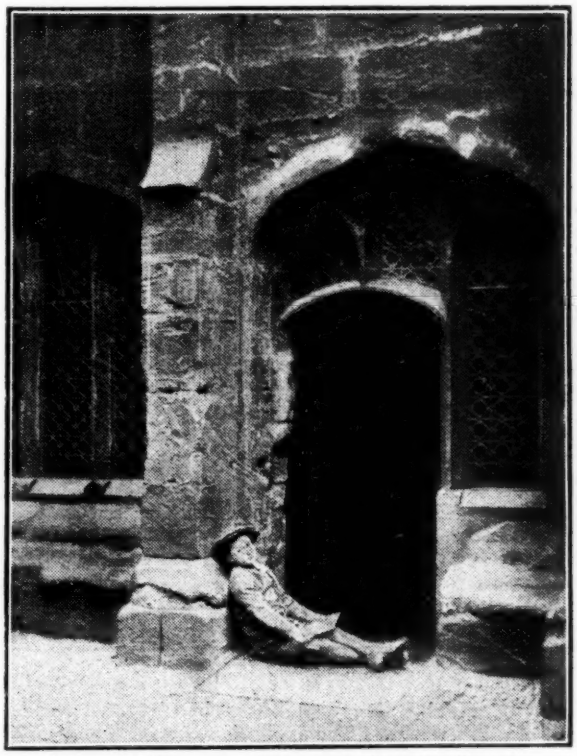
After receiving its charter the town led its mediaeval life much as other English towns, with certain crafts of milling, fulling, spinning, weaving, and dyeing. Agriculture was, however, the chief occupation for some centuries until the persecution of the Spaniards in the Netherlands and of the Catholics in France drove many Protestant craftsmen to England. Some settled in Manchester and neighbourhood because of its water resources, and this incident also forms the subject of one of the frescoes in the Town Hall. In this way, amongst other trades, the spinning, weaving, and dyeing of wool and flax which was carried on in the town received a great stimulus. Leyland, visiting the neighbourhood in 1536, describes Manchester as "the fairest, best builded, quickkest and most popular tounne of all Lancastreshire"; and Defoe, two centuries later,

in his tour through Great Britain (1724–26) visited Manchester and described it as "one of the greatest if not really the greatest mere village in England." The population then was below the 22,000 of 1770.

COTTON.

It was during the sixteenth century that "Manchester cottons" became known as a desirable article of trade. They were known under this description in Rouen in 1553. They were also known as fustians, a name derived from the Fustat quarter of Cairo, where similar goods were woven. Manchester cottons were at first only made of wool, linen, and some silk, but about 1600 a new material was introduced into the town, according to a petition of London merchants—"a kind of bombast or down being a fruit of the earth growing upon little shrubs or bushes brought into this country from Smyrna, Cyprus, Acra, and Sydon, but commonly called cotton wool."

Cotton is the Anglicized form of "kutun," which was the Arabic word for the new material. Each cotton fibre is the outgrowth of a single cell of the outer coat of the seed of the cotton plant, and important features about it are that it is a thin-walled, somewhat elastic tube sealed at both ends with a natural twist on its own axis and with varying diameter. These natural characteristics make cotton the easiest of all materials to twist into a thread, and consequently so cheap for cloth making that it is said that nine-tenths of the clothing of the world is made from it.



CHETHAM'S HOSPITAL: ENTRANCE TO CLOISTER COURT.

Cotton must have been spun in hot Eastern countries where the plant grew since artificial clothing became necessary. It was always done by hand, twisting the fibres with the fingers into a single thread, which was wound on a spindle or a wheel. This primitive process of cotton spinning continued wherever cotton was used, and only one thread, or at the most two threads, could be spun at a time until the middle of the eighteenth century, when the genius of a few Birmingham and Lancashire men revolutionized the whole industry of spinning and weaving cotton, and led to the production of machines on which 1,200 spindles, instead of one or two, can be rotated at then unthought-of speeds.

The impetus to these inventions came in 1733 from John Kay's flying-shuttle, which enabled the weaver to work much quicker and to weave wider cloths. Before Kay's invention, which was a very simple one, the weaver had to bend over his cloth and throw the shuttle by right and left hand alternately from each side through the loom. Kay put a "stick" into the weaver's hand, from the free end of which cords went to both sides of the loom, where they were attached to a metal weight which could be jerked forcibly by movement of the stick and cord against the shuttle, and so knock it through the loom to the other side, when an opposite movement of the stick sent it back through the loom. The principle is still in widespread use in the mechanical loom of to-day.

At that early period of the introduction of machinery every contrivance that increased production was looked upon by the workpeople as certain to deprive them of their means of existence; consequently they endeavoured to wreck all such new inventions. This wrecking was a frequent theme of Victorian novelists, as witness *Shirley* and *John Halifax, Gentleman*, to mention but two instances. A mob succeeded in wrecking the flying-shuttle, but only for the time being, for, like many inventions which decreased the cost of production, it increased the demands for a cheap material, and was therefore a means of additional employment.

Before Kay's time all the cotton was spun by hand, and there was no real increased demand for the new shuttle until twenty-five years after its invention, during which time mechanical spinning and weaving revolutionized the cotton industry. Although East Lancashire and West Cheshire are now the centres of the mechanical cotton-spinning industry, and most of the present-day machinery was invented or perfected there, the first useful steps towards substituting machines and artificial power for the human finger and muscles were taken at Birmingham. There Lewis Paul, in 1738, patented a machine in which successive pairs of rollers moving at different speeds attenuated a thick rope or roving of cotton fibres, which was prepared by hand, into a finer thread or yarn. He also patented (1748) a most important combing machine to prepare this preliminary roving. With these machines Paul started mills in London and in Birmingham, and, although the inventions were said not to be of much practical use, he made £20,000 out of them. Real progress in mechanical spinning was first achieved by three Lancashire men — James Hargreaves of Blackburn, who patented in 1767 the first commercially successful machine, called the "jenny," which could spin many threads at a time when driven by hand power; Richard Arkwright, born in Preston, but working in Bolton (1769), who improved Paul's roller drawing and combing machines to make them of real value, and applied first horse, then water, power to them; and lastly, Samuel Crompton of Bolton, who combined in one machine, called a mule, the essential features of Hargreaves's jenny and Arkwright's roller drawing machines. On one of these wonderful machines can now be spun on 1,200 spindles (not one only as aforetime) thread so fine that more than 150 miles of it may weigh only one pound.

With these machines so much cotton thread was produced that the looms worked by hand labour could not use it, even when the fly shuttle was adopted by weavers. The difficulty became known to Dr. Cartwright, a Leicestershire clergyman, who came to the rescue with the invention of a power loom, driven at first by a bull, and later, as he improved it, by water and steam (1790). The loom could then do with all the yarn produced in the mills, and the prosperity of operatives and owners and of Lancashire began.

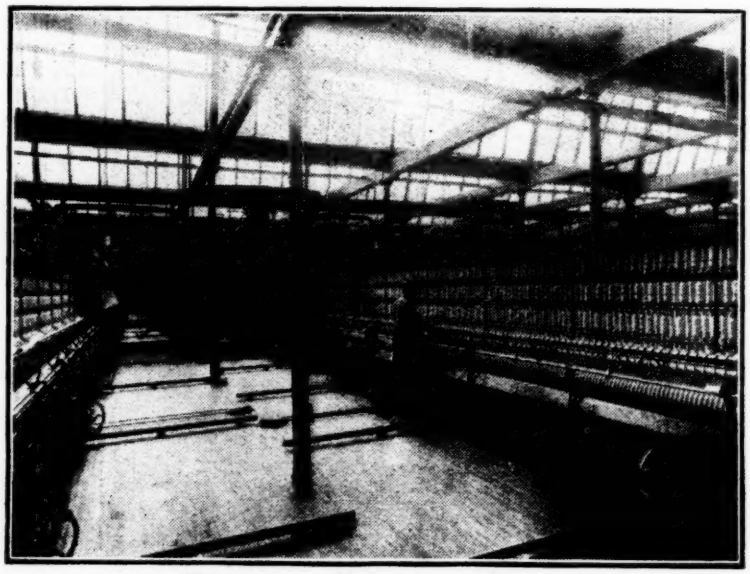
Spinning and weaving machines at first were worked by hand power, adult and child, in the people's homes; later they were driven by water power in mills set on the banks of streams, and so began the great mill industries of Lancashire valleys. Finally, in 1789, steam was used for power in cotton mills for the first time in Manchester. Such was the impetus given to the cotton industry by these inventions that the human labour for the mills of the district was soon exhausted, and it had to be imported from other parts, often from the workhouses of London and other large towns. The population of Manchester, in consequence of the increase in the cotton industry, grew from 22,000 in 1773 to 43,000 in 1788 and 70,000 in 1800, and sad indeed were the conditions of life among the working classes and the abuses of child labour by parents

and manufacturers. The hours of child labour in mills which ran night and day were unrestricted by law, and there was no supervision of the mills by factory inspectors.

PUBLIC HEALTH.

The result was, naturally, serious ill health in the cotton operatives, and such outbreaks of typhus fever occurred that the leading citizens became alarmed, and with the support of some of the medical men of the town, especially Dr. Thomas Percival and Dr. John Ferriar, formed a committee of public safety, or board of health, in 1796, the first of such committees to be formed in England.

Among the good employers who thought of the welfare of their workers, especially of the children, were the Grants, the prototypes of the Cheeryble Brothers of *Nicholas Nickleby*. Public action led also to factory legislation, and it is interesting, if sad, to read some of the evidence—venal, one would almost say suborned, on their own acknowledgement—given by medical men on the hours of labour of children. Let me get the worst over at once. One, a Manchester doctor giving evidence for the masters before a committee of the House of Lords, said he could not give any number of hours below twenty-four which might be above or below the line of which a child (of 6 or 9 years of age) could work without suffering. A surgeon and apothecary of Bingley in Yorkshire did not think that a little recreation or amusement during the day was contributory to the health of young persons. Fortunately, others thought that the hours of working of a person under 16, exclusive of the time allowed for meals, ought not to exceed *nine* hours in winter and *ten* in summer; and it was a question whether, with impunity, the strength of adults was capable of much longer exertion than this.



MACHINERY IN A MODERN COTTON MILL.

As I said in the opening line of this account of the development of Manchester, its geographical situation has had much to do with its commercial success and in making it the leading town in the cotton trade of the world. The district known as East Lancashire and West Cheshire, lying between the hilly background of the country and the western ocean, has a temperate, equable, and moist climate, one which is ideal for cotton spinning and weaving, and especially for producing the finest cotton products, for which Manchester is celebrated and unrivalled in any part of the world. The annual rainfall is only 36 inches, but Manchester has the reputation of being a wet place, especially among our gentlemen friends of Liverpool—Manchester men, Oldham lads, fellows from Rochdale, and Liverpool gentlemen, as the local saying is. As president of the Manchester Medical Society I attended the annual dinner of the Liverpool Medical Society, and exchanged a few stories with a legal guest. With magnetic guile he drew me on to talk of weather, and I said our rainfall was not so bad as Liverpool's. On replying for the guests he opened in courteous terms about his neighbour from Manchester who had told him some wonderful stories which he did not care to repeat, but amongst other things "he actually asked me to believe that Liverpool is a rainier town than Manchester." It was the speech of the evening. In addition to the plentiful supply of water, Manchester is in the middle of a rich coal-bearing district, which made steam power cheap, and it was close to a maritime outlet on the Mersey. Dr. W. F. Dearden has shown in his Milroy Lectures on the Health Hazards of the Cotton Industry how even the slight differences in the atmospheric content of water which occur in the large cotton manufacturing towns affect the fineness of the article which is manufactured in them.

The poor conditions of life of all the labouring classes in the eighteenth century were greatly improved in time by the development of the cotton industry. Much more money, small in total indeed though it was, reached a home by the earnings of those members of the family who worked in a spinning mill and those who wove at home, and there was, consequently, more money to be spent on necessaries of life—food and clothing, boots, etc. Trade generally, therefore, was improved. Between 1760 and the Reform Bill (1832) the output of cotton manufactures increased one hundredfold, and in 1806 it was said to supply one-third of the total of British exports. The cotton trade, directly and indirectly, played a very great part in meeting the heavy National Debt incurred after the Napoleonic wars. It is said that Arkwright offered to finance the Government in the wars with France if they would continue his patent rights for a number of years.

The opening of the Duke of Bridgewater's canal, which brought coal from his pits at Worsley to Manchester at cheap rates, was a great help to steam power, and when the canal was extended to Liverpool; in 1772, this cheapened cotton at a time of great need for it. A further event of great importance to the cotton trade was the opening of George Stephenson's railway between Manchester and Liverpool in 1830. This was a great national event, with the Duke of Wellington present; it was marred by an accident which proved fatal to Mr. William Huskisson, one of the promoters of the railway and a member of Parliament for Liverpool. There is a marble tablet to his memory and the incident on the railway by Parkside, which he who travels may see. The original terminus of the railway is still in use in Liverpool Road, Manchester, where it forms part of the railway's goods department.

IMPORTANCE OF THE COTTON INDUSTRY.

Manchester is the centre of the cotton industry of the kingdom. Included in the industry now is the new material called artificial silk, which is having a very great influence on the trade when mixed with cotton in manufactured materials.

It is estimated that no fewer than 10,000,000 of the population of Great Britain are directly and indirectly dependent on the cotton trade for their daily bread, so great are the ramifications of the trade, the interdependence of one industry upon another, and the "wheels within wheels" of commerce. The cotton trade depends almost entirely on the export trade, and cotton goods comprise nearly one-third of all our exports of manufactured goods. The value to our home trade in cotton goods is estimated at only about one-fifth of the whole cotton trade. In 1927 more than 4,000,000,000 square yards of woven cotton goods, valued at £110,000,000, and over 200,000,000 lb. of cotton yarn, valued at nearly £23,594,000, were exported.

The profits from the cotton industry do not end with those received from the actual selling price of the finished material, yarn or cloth. There is, in addition, the cost of insurance, financing, freight, and merchants' commission and profits, almost all of which are a profit earned by this

country, and over £500,000,000 capital is engaged in, or directly dependent on, the trade. If the cotton trade ceased to exist to-morrow Great Britain would become a third-rate power, from a commercial point of view, and probably at least one-fourth of the population would have to emigrate, as it would no longer be possible for them to earn a living in this country. There is no other manufacturing export industry, either in this country or in any other part of the world, which can be compared with the cotton trade; and it enables Great Britain to pay for a large portion of the meat and grain and commodities which she has to purchase from other countries.

After the cotton industry in importance come the engineering, chemical, and rubber industries of the town and neighbourhood. A great factor in the development of the business of the town has been the influence of the Ship Canal, by means of which 15,000-ton ocean-going steamers can get into the heart of the city and bring the raw materials, food, and other goods which pay for the cost of manufactured articles sent abroad, and of the insurance, freight, and financing of the trade. Six and a half million tons of goods are brought to, or carried away from, Manchester and Salford in a year now by the Canal. Direct sailings are made from the docks to and from the chief ports "in all the seas of all the world."

Manchester has contributed to the enrichment of the country in other ways than those of commerce; but that is another story which awaits its telling.

Scotland.

Future of Hospital Services in Scotland.

A MEETING of the Voluntary Hospitals Liaison Committee was held on January 16th, on the invitation of the Department of Health for Scotland, in the offices of the department at Edinburgh to consider the bearing of the Local Government (Scotland) Bill on the future of the hospital services, particularly those of the voluntary hospitals. Dr. Walter Elliot, Parliamentary Under Secretary of State for Scotland, and officials of the department, were present. The meeting reviewed various suggestions for a clause designed to remove the Poor Law stigma from treatment in the hospitals which are at present under Poor Law administration; it was unanimously agreed that this was desirable, and that public bodies should be given power to provide hospital treatment apart from the Poor Law. It was considered essential, however, that adequate safeguards should be made to protect the voluntary system, and the attention of the meeting was mainly directed to finding a form of words which, embodied in the bill, would achieve this purpose, and also give the necessary powers to municipalities. It was decided to hold another meeting this week. The members of the Liaison Committee are Sir David Wallace, F.R.C.S., Colonel D. J. Macintosh, Mr. James Macfarlane, Major-General James Thomson, Mr. C. F. Henderson, and Mr. James Thomson. Dr. Elliot intimated that the Secretary of State for Scotland had appointed Mr. Niven F. M'Nicol as secretary of the committee.

Pneumonia Epidemic in Scotland.

An outbreak of pneumonia, which attained considerable proportions, has occurred in Glasgow and other parts of Scotland. At the opening of the week beginning January 13th there were 600 cases of pneumonia in Glasgow hospitals, and on January 14th there were applications for the admission of about 100 others. It is believed that many cases of pneumonia have been contracted by persons suffering from mild attacks of influenza who have returned to work too soon. The total number of deaths in the city in the week ended January 12th was 645, as against 388 in the preceding week; this gives a death rate of 31.2 per 1,000 of population per annum, against 19.5 in the previous week. Deaths from pneumonia numbered 118, including 40 children under 5. The staffs in large businesses appear to have been seriously depleted by the occurrence of influenza, bronchitis, and pneumonia; about 30 per cent. of the tramway workers were on the sick list, and the service was maintained with difficulty, whilst in the Post Office some 10 per cent. of the employees were absent. In the whole of Scotland during the week ended January 12th there were 1,164 deaths, giving a corrected death rate of 24.1 per 1,000; this rate is 6.8 above the average. Relatively high death rates were also recorded in Greenock (34.3), Paisley (23.5), Dundee (19.6), and Kilmarnock (26.1). In Edinburgh the death rate was 17.1, and in Aberdeen 16.7. Deaths from influenza numbered 56, and of these 50 occurred in Glasgow.

Cupar Hospital Extension.

The Adamson Cottage Hospital at Cupar has recently been extended through a gift of £5,000 to the trustees by Mr. and Mrs. J. B. Crichton, Luthriebank, who have also presented an annual income of £1,500 for the next seven years. The hospital was reopened on January 14th by Lord Cochrane of Cults, who said that the hospital was unique in the conveniences it offered amongst the cottage hospitals of the country. In referring to the King's illness, in which great advantages of skilled medical advice and devoted nursing had been available, Lord Cochrane remarked that a hospital equipped like the Adamson Hospital would bring similar advantages within the reach of all in the district who were suffering severely. The additions to the hospital consisted of an operating theatre, x-ray and electrical departments, private male and female wards, and waiting and dining rooms.

Edinburgh Royal Maternity Hospital.

At the monthly meeting of the board of directors of the Edinburgh Royal Maternity and Simpson Memorial Hospital, held on January 16th, reference was made to the retirement on the age limit of Dr. William Fordyce, who had been physician to the hospital for the past twenty-seven years. To mark their appreciation of his services the directors appointed Dr. Fordyce as consultant obstetrician to the hospital. At the same meeting Dr. Douglas Miller, who for some years has been assistant physician and registrar to the hospital, was elected as physician to fill the vacancy caused by the retirement of Dr. Fordyce.

England and Wales.

Society of British Neurological Surgeons.

THE fifth meeting of the Society of British Neurological Surgeons was held in London last month under the presidency of Sir Percy Sargent. A visit was paid to Guy's Hospital, where Mr. Lancelot Bromley operated, turning an osteoplastic flap by de Martel's method. The society was addressed by Dr. Hurst on "The cause of trophic disturbances in nerve injuries," and Dr. C. P. Symonds showed cases, including radiograms of a calcified angioma of the brain, to which Mr. Bathe Rawling was able to exhibit a parallel. Dr. Symonds further exhibited a case illustrating tonic innervation of the hand in a young woman, clinically diagnosed as a congenital aneurysm, and a case of cervical rib with cerebral embolism. The relationship between vessel compression and embolism was discussed. Mr. Bromley presented a female patient from whom he had enucleated a spinal tumour; persistent contractures of the hamstrings had necessitated tenotomies, so successfully carried out by Mr. Trethowen that the patient was now able to walk up and down stairs. At the resumed meeting, held in the afternoon at the National Hospital, Queen Square, Sir Percy Sargent opened a discussion on the radium treatment of cerebral tumours, and Mr. Ross described the technique and results so far obtained in a small group operated upon at St. Bartholomew's Hospital. This subject, theoretically so full of promise for the glioma patient, was fully discussed by other members of the society. Dr. Greenfield read a paper on the "Haemangiomatous cysts of the cerebellum (Lindan's tumour)," illustrated by a series of cases in which the pathology of the condition was built up step by step. Other papers read were Professor Archibald Young's on "Chordoma," Mr. Julian Taylor's, advocating a more posterior approach than by the classical London method to the root of the Gasserian ganglion, Mr. A. A. McConnell's

on "Mistakes in the interpretation of ventriculograms," and Mr. Lambert Rogers's on "Elephantiasis neurofibromatosa." The society's dinner was held at the Langham Hotel, with Mr. Donald Armour in the chair. On the following morning Mr. L. R. Broster divided the sensory root of the trigeminal nerve for neuralgia, and showed a number of patients, including a young woman with a suprarenal tumour and virility (the second example of this unusual condition which he has placed before the society). Dr. Adie read a brief paper describing cases of spinal and pituitary tumours, and emphasized the importance of being on the watch for these latter in cases of non-syphilitic optic atrophy. Dr. A. B. Rosher contributed a talk on the chemistry and cytology of cerebro-spinal fluid. Dr. Viner discussed the histology of the gliomas, and showed a number of specimens.

Welsh National Memorial Association and the Local Government Bill.

The Minister of Health, accompanied by Sir Kingsley Wood, on January 21st received a deputation from the Welsh National Memorial Association; the deputation was introduced by Colonel David Davies, M.P., president of the association, and included Sir L. Forestier-Walker, M.P., Dr. D. Rocyn Jones, Dr. W. E. Thomas, and Dr. J. H. Williams, M.P. The deputation pointed out that under the Local Government Bill grants towards health services would in the future be included in the general block grants to local authorities, stating that they were anxious that the bill should specifically provide that the Welsh local authorities should continue to contribute out of the block grants towards the work of the association. In particular, the deputation urged that in calculating the loss of grants for the purpose of arriving at the Exchequer contributions payable to the Welsh authorities regard should be had to the capital expenditure incurred by the association out of its own funds, in respect of the provision of hospitals and sanatoriums. The Minister replied that the position of the association would be fully safeguarded by the scheme provided for in the bill, which would prescribe the contributions payable to the association by the local authorities. He intimated that he intended to move a new clause to enable the Minister, on the application of the authorities concerned, to make, on behalf of and at the charge of local authorities, a direct payment to voluntary associations such as the Welsh National Memorial Association of the contributions payable under the scheme. He promised also to insert a provision designed to remove existing difficulties as to the raising of loans which would facilitate the proposed extension of hospital accommodation in Wales. Finally, he undertook to propose a concession under which the grant of one-third of the capital expenditure payable for the standard year would be taken into consideration in calculating the losses on account of grants for the purpose of the general Exchequer contribution under the bill.

Midwifery in London: Criticisms by L.C.C. Committee.

A report was presented to the London County Council on January 22nd setting forth the evidence which it is proposed to give on behalf of the Council to the Departmental Committee (under Sir Robert Bolam's chairmanship) on the training and supply of midwives. The report sets out the position of midwifery in London during the last ten years (here we reproduce only the figures for each third year).

Year.	Total No. of births (exclusive of stillbirths).	Estimated No. of births attended by midwives.	No. of midwives notifying intention to practise in London.
1918	70,976	34,976	535
1921	59,839	46,000	758
1924	85,147	42,000	906
1927	73,203	34,000	870

The Midwives Acts Committee of the Council states that while a rule of the Central Midwives Board requires that candidates for examination must have witnessed not fewer than ten labours, and in addition have attended and watched the progress of not fewer than twenty labours, it is doubtful whether this rule is strictly complied with, as pupil midwives are often moved from one case to another, which prevents their having sufficient opportunities to see a case in all its stages. Institutions which teach midwifery, says the report, should be so staffed that they do not depend upon the work of the pupils, and are not compelled to arrange the work in order to get it done most easily, rather than to the best advantage of the pupils. The ideal to be aimed at should be the teaching and training of the pupil midwife at institutions adequately staffed at which the whole course of training, intern and extern, can be given. The committee has found some midwives apt to leave certain duties concerning both mother and child to handywomen, who may also be employed in the respective cases. Many midwives are extremely ignorant of the matters referred to in the footnote to Rule C 5 of the Board, regarding a knowledge of ophthalmia neonatorum, puerperal fever, and venereal diseases, among other matters, and the committee suggests that this be included in the rule itself and made compulsorily. Again, many midwives, not trained nurses, do not realize the importance of, and cannot even recognize, such conditions as general illness, impending collapse, cyanosis, urinary abnormalities, symptoms of lung disease, and so forth; they have insufficient knowledge of anatomy and of the theory and technique of sepsis and asepsis. The proposed evidence also deals with the qualifications for teachers in midwifery (who should be either medical practitioners with special experience in obstetrics, or fully trained nurses holding the Central Midwives Board certificate and with definite experience of practical midwifery), and, again, with post-certificate courses, which, the committee thinks, should be made compulsory on all practising midwives at intervals of four or five years. The report adds some information regarding midwifery practice in London. In East London the average fee for primiparae is between 25s. and 30s., and for multiparae between 16s. and 21s. The corresponding fees in West London are between 42s. and 50s., and between 30s. and 35s. respectively. With regard to the training of medical students in midwifery, the Midwives Acts Committee cannot regard as satisfactory the extern practice at some hospitals. Sometimes the student goes to a case unaccompanied, and in others the students' cases are nursed by handywomen. It is regarded as essential that medical students shall see only the best midwifery nursing, and shall be accompanied at their cases only by certified midwives with a good standard of work. The proposed evidence goes on to deal with the powers and duties of the Central Midwives Board. The procedure of the Board, it is considered, in connexion with the hearing of prima facie cases of malpractice, negligence, or misconduct on the part of the certified midwife submitted to the Board by the local supervising authority is in need of revision. The normal procedure should be for the prosecution of such midwives to be conducted by the legal representative of the local authority, and power should be given to the Board to enable it to compel the attendance of witnesses and to take evidence on oath. It is also thought that the constitution of the Board should be amended so as to provide for the election of a smaller number of members than at present, and for the inclusion of a member possessing legal training. Another suggestion is that the administrative duties of the Central Midwives Board in connexion with the approval of training centres and of midwives or other persons desirous of undertaking the training of pupil midwives should be transferred to the Ministry of Health, which should have the assistance of an advisory committee representative of local supervising authorities, medical practitioners, and certified midwives.

North of England Dermatological Society.

At a meeting of representative dermatologists from Leeds, Liverpool, Manchester, and Sheffield, held in Manchester on January 15th, it was decided to expand the Manchester Dermatological Society into a North of England Dermatological Society. The society, in addition to the annual general meeting, will hold four clinical meetings a year, one in Liverpool, one in Sheffield, and two in Manchester. The following offices were elected: President, Dr. Savatard (Manchester); vice-presidents, Dr. R. W. McKenna (Liver-

pool), and Dr. Hallam (Sheffield); secretary, Dr. Mumford (Manchester); members of council, Dr. Ingram (Leeds), Dr. Dyson (Manchester), and Dr. Lancashire (Manchester). Any dermatologists (other than those already notified) in the North of England who would like to join are asked to write to the secretary, Dr. P. B. Mumford, 96, Mosley Street, Manchester.

Reconstruction of the Middlesex Hospital.

The work of rebuilding the Middlesex Hospital continues steadily. In the annual report for 1927, presented to the court of governors early in 1928 and now issued, the part of the development scheme dealing with the new nurses' hostel is described in some detail. In the old hospital nurses were housed in five different buildings, but, thanks to the magnificent generosity of an anonymous benefactor, the sum of £160,000 has been given for the erection of a hostel on an adjoining site to provide sleeping, refectory, and recreation accommodation for 180 nurses. The gift was inspired by the good offices of Mr. A. E. Webb-Johnson, surgeon to the hospital and treasurer of the medical school, who has, since the war, raised by his own personal efforts a sum of over £300,000 for the hospital, for the medical school, and for medical education and research. The remainder of the report contains the customary statistical summaries, which show that the number of in-patients during 1927 was increased by 193 over that in 1926 to a total of 5,476; the out-patient figures again expanded substantially, new patients reaching a total of 49,018, the total attendances being 218,360. The average cost of patients was diminished, partly as a result of the increased numbers; the weekly in-patient cost was approximately £4 16s. instead of over £5, and the actual expenditure of the hospital decreased by nearly £1,000 in comparison with that of 1926. The new west wing is rising fast, and the beginnings of the reconstructed hospital are now sufficiently definite to indicate something of the magnitude of the responsibilities with which its board will be confronted, and of the task which has been faced during the period of planning.

Lady Chichester Hospital, Hove.

The emphasis now generally laid on the value of suitable and specialized treatment of early nervous disorder and borderline mental cases finds expression in the activities of the Lady Chichester Hospital (Hove), founded in 1905 for poor women suffering from early nervous breakdown. In the report for the year 1927 it is stated that a large proportion of the patients treated at this hospital make a satisfactory recovery. The treatment adopted is catholic in its scope. At present, rest, fresh air, and generous diet form the basis of treatment on the physical side. A sun-cure court and ultra-violet ray apparatus are being added in the course of the year. Stress is laid on the importance of occupation and amusements, which exercise their therapeutic effect by reawakening objective interests in patients otherwise preoccupied with their own symptoms. When such patients, for example, develop a special capacity for hand-loom weaving, or spinning, or gardening, or are prepared to enter into the spirit of a fancy-dress dance, they have made a definite advance towards cure. Every patient is thoroughly examined on admission, and wherever possible treatment is directed to the removal of any physical disability from which she may be suffering. Habitual constipation, dyspepsia, pyorrhoea, and any septic focus in the tonsils, nasopharynx, ear, or elsewhere, are appropriately dealt with. Physiotherapy—including massage, hydrotherapy, electrical treatment, and remedial exercises—is prescribed in suitable cases. Some patients derive benefit from organotherapy. The psychological methods of treatment include simple suggestion, persuasion, re-education, and mental analysis, and in each case a constructive effort is made to help the patient to redirect her mental energies into socially useful channels. The treatment adopted for any patient is based on a long and sympathetic study of her individual characteristics and preferences, and every attempt is made to avoid the rut of routine methods. Accommodation is provided for fifty-three in-patients, and there were 1,778 attendances at the out-patient department during the past year. The hospital has educational as well as curative activities, and provides tuition for nurses desirous of specializing in the care of patients suffering from early nervous and mental disease.

India.

Public Health Problems in India.

THE annual report of the Public Health Commissioner with the Government of India for 1926 has recently been published in two volumes, the second being devoted to the health of the European and Indian forces and of the jail population, while the first deals with health conditions in their more general aspects. The report has been based upon the vital statistics of the country, supplemented by information from administrative medical officers, directors of public health, medical officers of health, and others in close touch with the medical situation in the provinces, and from officers engaged upon special surveys or inquiries on various diseases. It should be remembered that since the inception of the Montagu-Chelmsford reforms the subject of public health has been under the sway of the provincial Governments, and conditions in regard to public health—as in almost every side of life—vary widely from one part of the subcontinent to another. The central Government has little direct influence in the development of health services, and there is consequently no uniform standard and no co-ordinated policy applicable to British India as a whole. In view of these points, and also of the fact that many of the topics dealt with in the report having already been touched upon in these columns, perhaps the main general interest in the report lies in the views expressed on certain broad questions relating to public health in India.

The summary embodied in the report, and bearing the signature of Lieut.-Colonel F. P. Mackie—who completed the report as officiating public health commissioner in the absence on leave of Colonel J. D. Graham—calls attention to the distressingly high level of infantile mortality. In 1926 India's death rate was $2\frac{1}{3}$ times, and her infantile mortality rate $2\frac{2}{3}$ times, those of England and Wales, and generally an Indian's expectation of life at birth is less than half the average figure for a European. In several towns in 1926 approximately half the infants born died within the first year of life. Such figures as are available respecting the medical examination of school children show that a very high proportion (about two-thirds of those inspected in Bombay) were either diseased or defective; malnutrition was the most prevalent condition, and this, with other evidence, suggests that many of the children were suffering from deficiencies in diet. Colonel Mackie notes also the ill effects of certain social customs, the abolition of which he associates with health education, and the arousing of a public health conscience and a sense of civic responsibility as the preliminary steps of a public health policy. In this connexion mention is made of the publicity work carried on in several provinces with excellent results; a note on the development of health propaganda in Madras was published in the *Journal* of January 5th (p. 34).

A striking illustration of the nature of the problems confronting Indian health administrators is given in the course of a note on the prevalence of cholera, which is essentially a water-borne disease, its prevention being a question of the provision and use of pure water supplies. In one province the attention of the board of health was invited to a recommendation that at least one pakka well for the supply of drinking water should be built in each village; it was found that with the funds available for this purpose 600 years would be required for the execution of the programme. The chief measures employed against plague, which caused about 196,000 deaths in British India in 1926, are mass inoculation and rat destruction; a scheme for the thorough "de-ratting" of villages which was put into operation in the Punjab, where outbreaks were forecast, in the pre-epidemic period

is stated to have met with "phenomenal success." In connexion with malaria, the most important preventable disease in India, the suggestion is made that possibly the main hope of salvation lies in steady improvement of the general health, which will increase the resistance to the disease. The importance of nutritional research is emphasized. It will be noted that, in the case of the three diseases mentioned, the problems they present are financial and administrative rather than purely medical; in the words of the report:

"The knowledge is there, but the means or the will to apply it are lacking." Colonel Mackie, expanding this theme, states that in the case of five of the principal diseases of India—malaria, plague, small-pox, cholera, and kala-azar—the natural history of the disease has been sufficiently elucidated "to enable preventive medicine to stamp them out if only money, energy, and co-operation were combined in one grand attack."

Too much praise cannot be given to the various research agencies who have made such a statement possible.

After paying a tribute to the work of the leading voluntary organizations, and referring to the importance of public co-operation in public health, the summary concludes with a note on certain administrative problems which are the consequence of the reforms. Mention has already been made of the fact that under the diarchal system the provinces are practically autonomous in the sphere of public health. It is urged that some central co-ordinating and advisory body on the lines of a Ministry of Health is necessary to organize, among other things, the control of epidemics, and to establish a definite standard in health services for the provinces. Occasion is taken to direct attention to the importance of preventive, as compared with curative, medicine. In conclusion, a plea is put forward for the provision of adequate facilities for training in public health work under Indian conditions, in view of the fact that this is being more and more handed over to Indians. Colonel Mackie writes:

"It is our duty when the time comes to hand over the government of the country to its own sons to see that we leave it with a strong, well organized, and efficient public health service; and that is, I believe, the greatest boon which Western medical science can confer upon India."

Prince of Wales Medical College, Patna.

The annual report of the Prince of Wales Medical College, Patna, for the year 1927–28 is of special interest in view of the fact that that institution is of recent foundation, and is endeavouring to raise its standard in the hope of securing recognition for its degrees from the General Medical Council. The college commenced its third session in July, 1927, with 195 students on the rolls, including 41 new entrants. Applications for admission numbered 82, against 183 and 270 in the two previous years, and the principal, Lieut.-Colonel H. R. Dutton, fears that a further decrease may make it difficult to maintain a satisfactory standard of quality in the students. In the course of the year the first group of regular students, who commenced work in 1925, reached Part II of the second M.B., B.S. examination, which only 12 of the original 31 succeeded in passing. At the end of the year the new extension of the department of physiology was almost complete, and work on various other buildings had made considerable progress. Nothing had been done, however, towards the foundation of the proposed new public health laboratory. Important additions have been made to the equipment of several departments, but the library is deficient in books of reference and in files of medical and scientific journals. Despite the difficulties inseparable from the early years of a new institution of this kind, research work has been started in all departments.

Provincialization of Medical Services in the Punjab.

The tendency in most of the provinces of India in recent years has been definitely towards the substitution of a provincial health service comprising the health officers employed in the districts for the system under which such officers were employed by the individual district boards. In a number of provinces this change is being carried out gradually, and in the Punjab the scheme for provincializing the service of district medical officers of health, which received administrative sanction in 1926, came into force on April 1st, 1927. In his annual report for that year the director of public health, Lieut.-Colonel C. A. Gill, states that the cadre comprises 37 appointments; 28 are district officers, 3 assistant epidemiologists, 2 are held in reserve for emergencies, and the remaining 4 officers constitute a leave reserve. The existing incumbents of provincial and district board appointments were posted to 21 districts, and 6 additional appointments were made during the year, leaving only one district (excluding Simla) without a whole-time medical officer of health holding a diploma of public health. Three of the reserve posts have also been filled, but the auxiliary staff originally sanctioned for district work has been considerably curtailed, so that it was only possible to provide each district with one sanitary inspector and one dispenser, the remainder—including 24 sub-assistant surgeons and 19 sanitary inspectors—being engaged on a temporary basis for combating epidemics. One of the most urgent needs noted in the report is the provision of whole-time or part-time medical officers of health in the towns. Whole-time municipal medical officers of health were employed in nine towns, and three other large towns agreed to do so on condition that half the cost of the salaries was met by the Government.

Correspondence.

HEART SOUNDS.

SIR,—Dr. T. Stacey Wilson says, very rightly, when criticizing my letter on heart sounds (January 5th, p. 43): "I feel that a word of physiological protest must be uttered with regard to his suggestion that, in spite of the absence of valves or adequate sphincter muscles, the auricle can develop a force comparable with that of the ventricle."

I do not think that I have ever maintained that the auricle can exert such a "force." I maintain that it can, theoretically, exert such a *pressure*. With a Bramah press a small force can exert a pressure which can overcome a much greater force, and when the auricle, by contracting, becomes small, it has only a small internal area of resistance to oppose its contraction; whereas, should the ventricle begin to contract against it, supposing their contractions at any time to overlap, the ventricle would have a large internal area of resistance to oppose its contraction. For this reason chiefly, but also from the advantage a decreasing chamber has in piling up its muscles, if the mitral valve were stenosed the auricle could, theoretically, drive the residue of its blood into the ventricle. Could it do this practically? All depends, as Dr. Wilson suggests, on whether the sphincter at the great veins be adequate. Now the cardiac cycle begins at these great veins and spreads to the auricle. An effort is therefore made to prevent regurgitation. Is it adequate?

The cardiac contraction is a masked peristalsis, consequent on the mode of development of the heart from a tube. Starting at the great veins the auricle urges the blood away from them during its contraction. Roy and Adami[1] have shown how the pressure rises in the auricles, and how unlike a passive or "simple reservoir" the auricle is.

In mitral stenosis the left auricle hypertrophies (it is commonly taught that it dilates and hypertrophies, but I have shown, by examining the records of all cases of death with stenosis during ten years at Guy's Hospital, that *hypertrophy* is the characteristic change[2]), and sometimes approximates to a ventricle by the extent of its hypertrophy.

It is scarcely conceivable that a "simple reservoir," as Dr. Stacey Wilson says, approvingly, Dr. Mayo Collier considered the auricle to be, can have any purpose in hypertrophying. It would be less useful than before. The hypertrophy, on the other hand, of a contracting auricle which propels blood onwards is clearly advantageous, provided it does not leak backwards. Should it so leak it would accelerate death, which is obviously not its role.

[1] *Practitioner*, vol. 44, p. 170.
[2] *British Medical Journal*, February 5th, 1898

It hypertrophies to help, and gets the blood through the stenosed orifice for years. The sphincters at the great veins is adequate in practice; and sphincters are as good as valves, or we should have no birds.

The main purpose of my various communications on this subject has been to indicate the theoretical possibilities of the auricle, and to remove the impression that because the ventricle is thicker and has more muscle than the auricle it must necessarily overcome it. On equal terms it would do so, but the auricle scores by contracting first and becoming small. If the sphincters at the great veins be adequate, as I maintained in my letter on the genesis of the venous pulse,[1] the auricle should be more than a match for the ventricle, should their contractions overlap, as occurs apparently in many cases of mitral stenosis.—I am, etc.,

Mentone, Jan. 11th. D. W. SAMWAYS.

THE DICK TEST IN SCARLET FEVER.

SIR,—The article by Dr. William Brown on the Dick test in scarlet fever (*British Medical Journal*, January 5th, p. 13) confirms some of the work published by Dr. A. H. G. Burton and myself last year ("Relapses in scarlet fever," *Lancet*, May 26th), in particular, the effect of scarlatinal antitoxic serum in increasing the number of Dick-positive reactors during convalescence, and therefore the greater possibility of relapses and second attacks in serum-treated cases.

Dr. Brown does not state the size of the Dick reaction he obtained in his cases nor the area of erythema he accepted as a minimum for a Dick-positive result to be recorded, hence it is difficult to compare his work with that of other investigators. He refers to the disparity between his results in the first few days of the disease and those of Zingher, and suggests that it may be due to the toxin used. In the article above referred to we pointed out that the reason for Zingher's high percentage of positive reactors was that he included all grades of reaction. One cannot agree with Dr. Brown when he says "that it is impossible to state that the positive Dick test does indicate a lack of immunity to scarlet fever," and he gives no evidence for this statement, while the body of evidence against it is very considerable. Further, he contradicts himself when, with regard to the eight Dick-positive reactors out of his seventy-six serum-treated cases, he states that, "these eight patients had not developed their antitoxic immunity." Also when he says that of eighty-three patients "the Dick test was negative, thus indicating that they are no longer susceptible to scarlet fever," he is in direct contradiction to the case he quotes previously of a nurse who was twice found to be Dick-negative and yet developed a typical attack of scarlet fever. It would have been informative if he had stated in this instance how long before the attack the nurse had been Dick-tested. The fact that eighty-three patients were Dick-negative five years after an attack of scarlet fever by no means proves that it was the attack of scarlet fever that caused them to develop immunity.—I am, etc.,

Public Health Offices, Ilford, Jan. 14th. A. R. BALMAIN.

SEQUELS OF HEAD INJURIES.

SIR,—In Dr. C. P. Symonds's paper on cerebral states consequent upon head injuries, published in the *British Medical Journal* on November 10th, 1928, the following statement appears: "It would seem even that a fracture of the skull, if not fatal, may carry with it some degree of immunity from disabling after-effects" (p. 831). This statement is based on the observation that among ten cases of head injury with fracture not one patient was completely disabled, but seven were able to do full work and three light work; whereas in sixty-one cases without fracture the corresponding figures were seven, twenty-six, and twenty-eight respectively.

At first glance the difference between the two sets of figures is sufficiently striking; analysis, however, by the method described in chapter iv of Fisher's *Statistical Methods for Research Workers* leads to the result P=0.24, or, expressing this in words, the odds against the occurrence, through the agency of chance alone, of a difference as great as that found, or greater, are about three to one. This falls far below the limit demanded by most statisticians—namely, twenty to one. An illustration will make this clearer. If two cards drawn at random from a pack were found to belong to the same suit, no one would conclude or even suggest that the pack was in any way abnormal; yet the probability of this happening with a normal pack is no greater than the probability that the figures recorded by Dr. Symonds would be obtained if there were no relationship whatever between fracture and the frequency of after-effects.

In these remarks I do not, of course, mean to imply that a rigid statistical backing is required for every tentative suggestion—if this were insisted upon we should get nowhere; I merely wish to point out that Dr. Symonds's findings *can* be accounted for perfectly adequately by chance alone.—I am, etc.,

Pretoria, Dec. 12th, 1928. I. LIKNAITZKY, M.Sc., M.B.

[1] *British Medical Journal*, April 13th, 1912.

PYORRHOEA ALVEOLARIS.

SIR,—In a paper on pyorrhoea alveolaris by Mr. Humphreys in the *Journal* for January 19th (p. 99), and also in your leader on this subject, it would seem to be taken for granted that the deposition of the "subgingival or seruminal" tartar is the result of the growth of the *Leptothrix buccalis*; yet the fact is noted that this organism is only found in conjunction with this type of tartar, and is absent with the more common salivary variety. No reasons, however, have been brought forward to explain why the leptothrix should flourish in this situation and bring about this specialized tartar in this place. Is it not possible that, given this type of tartar, the circumstances become favourable for the growth of this special organism, and that the leptothrix is the result of the tartar rather than that the tartar is the result of the leptothrix?

In a book recently published by me, and referred to by Mr. Humphreys, I have considered at some length the biochemical changes which would result in such a deposition, and have attempted to show that these upsets are such as might commonly be expected at those periods of life in which pyorrhoea is most usually found. Further, the visualization there presented explains the reasons behind the antagonism between dental caries and pyorrhoea mentioned by Mr. Humphreys, and provides an explanation of the etiology of both conditions dependent upon alterations in the acid-base balance of the blood and the compensatory changes which these will bring about—an explanation which is not necessarily antagonistic to the suggestions of Mrs. Mellanby, but complementary thereto, in that it accounts for many cases of dental caries which cannot be explained on her hypothesis.—I am, etc.,

Bournemouth, Jan. 20th. F. W. BRODERICK.

SIR,—The article by Mr. Humphrey Humphreys on pyorrhoea alveolaris and the editorial comment thereon open up a subject of widespread interest to the medical profession.

In dealing with the causal factors Mr. Humphreys mentions diet, irregular arrangement of the teeth, and dental restoration in their varied forms, all in one way or another favouring stagnation. Besides these I would like to suggest another cause—namely, the commonly used toothbrush. It seems to me that the extremely prevalent condition of pyorrhoea alveolaris as observed in practice to-day in early adult life, in mouths with otherwise good teeth, must have some other common cause than those enumerated by Mr. Humphreys, and I cannot help thinking that the vigorous use of a hard brush, which is always septic, and frequently filthy, must, by infecting the gums and separating the alveoli from the teeth, help to form those very "pockets" on which so much emphasis is laid.

For some years it has been my custom to recommend these patients, and with satisfactory results, to discard the toothbrush altogether and make the necessary alteration in their diets, particularly an apple with the skin on after a meal; the teeth are then cleaned with an orange stick, that is, the alveolar margin and interdental spaces,

and finally the mouth washed out with a hydrogen peroxide wash. The method has, at least, the merit of being hygienic, easy of application, and not requiring any more time than the use of a brush. In my opinion if this practice were more generally adopted we should in time hear less of and see fewer patients with that annoying malady.

Who ever heard of anyone trying to make an article clean by using something dirty, or a surgeon endeavouring to cleanse the skin with a dirty septic nailbrush. Yet that is actually what is being done to-day when endeavouring to cleanse the teeth and gums with a dirty brush. A brush may be all right for dental plates, but not for healthy gums and teeth.—I am, etc.,

London, W.9, Jan. 20th. R. J. MAYBERRY, M.B., Ch.B.

SIR,—At the risk of being dubbed a crank on dead and infected teeth may I enter into the discussion you invite in your leader of January 19th (p. 115) on the effects of pyorrhoea, if any, on health.

How pyorrhoea can affect the general health, provided the gastric secretion be normal, is an enigma to me. Most of the organisms formed must be destroyed in the mouth, unless it is grossly septic; what escape must undergo the same fate in a normal stomach.

Mr. Humphreys's article is admirable and clears up a great deal about pyorrhoea. He rightly attributes most of the diseases of dental origin to dead and infected teeth. I fully endorse his opinion that a negative radiogram means nothing, though a positive one is invaluable. Weston Price goes further, and states that it is just those teeth which present no radiographic evidence of disease which are the worst offenders, since there is no protective granuloma at the apex.

The teeth which occasion constitutional disturbances fall into four main catagories[1]: (*a*) Teeth which have been filled and in which all caries has not been removed; decay proceeds under the filling, and if the filling is intact there is no exit for the pus. (*b*) Teeth in which the pulp was septic at the time of filling and in which root treatment was instituted; a procedure based on very doubtful principles.[2] (*c*) Those in which the pulp has died as the result of some failure of technique and has become infected through the blood stream. (*d*) Root fragments which were septic at the time of the extraction or have become infected autogenously. In all such teeth there is a bead of pus enclosed in rigid walls out of reach of any tissue which can replace it, though occasionally nature deals with it by calcification. Organisms develop in it, being derived from the original caries or from the blood stream. Especially important among these are the anaerobic ones which generate tension by forming gas, so that one can visualize pus being actually squirted into the bone marrow sinusoids, thence entering the blood stream.

In all patients presenting vague or atypical symptoms I make it my practice to examine the teeth. I have almost lost count of the cases of so-called rheumatic disease which have resulted from infected teeth. Among the rarer diseases due to them I have seen recurrent lymphangitis,[3] pyrexia, gleet.[4] An excellent list of such cases was published by Mackey.[5]

At one time I thought that a vital pulp would not transmit infection, but a recent case has made me dubious. The patient had had attacks of fibromyositis, which cleared up for a year after the extraction of an infected dead tooth. He then had a recurrence, though in the slightest possible form; the attacks ceased on having a tooth refilled, the original filling showing decay around it. Is it possible that the patient had been rendered so susceptible by the previous attacks as to be affected by the small amount of toxin liberated by the subsequent caries? The lowering of a patient's immunity to streptococci is well known.

[1] A. P. Bertwistle: The Role of Dead and Infected Teeth in Autogenous Infections, *British Medical Journal*, April 7th, 1928.
[2] C. Jennings Marshall: Dead and Infected Teeth: Ibid, April 28th, 1928.
[3] A. P. Bertwistle: Elephantiasis, *Brit. Journ. Surg.*, 1928, p. 295.
[4] A. P. Bertwistle: The Effects of Suppurating Pulps on Health, *The Dental Surgeon*, 1928, p. 596.
[5] L. Mackey: Dental Sepsis and Apical Infection, *The British Dental Journal*, September 1st, 1922.

The importance of dead and infected teeth is but now being recognized. That they occur among the educated classes who take scrupulous care of their teeth makes them all the more unsuspected.—I am, etc.,

London, W.1, Jan. 19th. A. P. BERTWISTLE, F.R.C.S.Ed.

TREATMENT OF CANCER BY LEAD.

SIR,—As colleagues of Dr. Todd we feel justified in supporting his contention that Mr. J. Basil Hume wrote his general condemnation of the treatment of cancer by lead from his own experience of particular cases. Dr. Todd, in his letter published last week (p. 130), quoted cases well known to us, and we have seen many others which, in our opinion, justify us in asking Dr. Todd to co-operate with us in treating cancer cases with lead compounds. Relief from pain and sufficient improvement to allow patients to return to work are the usual results. It has not been our experience that the patients were converted into physical wrecks, and we have not been impelled to decline to share the responsibility of continuing the treatment. On the contrary, we have not hesitated to recommend the University of Bristol and the Royal Infirmary to contribute to the maintenance of the research in which Dr. Todd is engaged.—We are, etc.,

J. A. NIXON,
Professor of Medicine in the University of Bristol; Senior Physician to the Bristol Royal Infirmary.
C. FERRIER WALTERS,
Senior Surgeon, Bristol Royal Infirmary.
R. S. STATHAM,
Bristol, Jan. 21st. Gynaecologist to the Bristol Royal Infirmary.

VACCINE TREATMENT OF PUERPERAL SEPSIS.

SIR,—With reference to the paper by Dr. R. R. Armstrong and Mr. W. Shaw, published on December 15th, 1928 (p. 1082), in which they give the results of an investigation to decide the utility of sensitized vaccines in the prophylaxis and treatment of puerperal sepsis, might we suggest the following views to explain the disappointing results of these authors?

In this investigation the authors used a sensitized killed *Streptococcus pyogenes* vaccine. Dr. J. A. Arkwright (December 29th, p. 1193) criticizes the value of sensitized vaccines, "which the authors [Armstrong and Shaw] themselves, in agreement with most other workers, declare to be of very doubtful value." Whether or not sensitized vaccines are a failure, it must be admitted that in the past the results of treatment of puerperal sepsis by vaccines, and even antistreptococcal serums, are varied, and though by no means unfavourable are somewhat disappointing, more especially as most investigators are agreed that puerperal sepsis, especially the graver septicaemic forms, are due to *Streptococcus pyogenes*.

A review of the literature upon the subject of vaccine therapy reveals the fact that the best results were obtained from the use of autogenous streptococcal vaccines. In our opinion the main difficulty is to get the correct type of streptococcus with which to make the vaccine. There are an enormous number of species of streptococci; for example, the *Streptococcus viridans* group consists of at least fifty distinct varieties. The haemolytic group also consists of many types. It was formerly believed that *S. pyogenes* and *S. erysipelatis* were identical. Birkhaug, however, has now proved that *Streptococcus erysipelatis* is a definite specific type. Moreover, treatment in the past of erysipelas by an antiserum prepared from *Streptococcus pyogenes* was more or less a failure. It has been demonstrated, however, that an antistreptococcal serum made from the *Streptococcus erysipelatis* is extremely efficient.

In puerperal fever streptococci have been isolated from the uterine discharges, and several of these have been claimed to be the cause of puerperal fever. The streptococci isolated, however, have not been sufficiently identified. It is not enough to say that the streptococcus is haemolytic, because there are many varieties of haemolytic streptococci. A streptococcal vaccine prepared from such discharges may or may not contain the specific streptococcus, and may therefore fail to give results. In our present state of insufficient knowledge it is a question of

luck whether the vaccine, be it autogenous or stock, really contains the causal organism. A streptococcus isolated in pure culture from the blood of a puerperal fever patient is more likely to be the true causal species.

The number of species of streptococci is enormous, and the identification of the various types is exceedingly difficult and baffling. Many varieties are certain to be obtained from uterine or vaginal discharges. It is not surprising, therefore, that the results of vaccine and anti-streptococcal serum treatment in the past have been disappointing, but this is not the fault of such modes of treatment. The reason of the failure is inability to isolate the proper species of streptococcus.

In our publications on the streptococci[1] we have shown that by the use of Warren Crowe's chocolate agar medium and photomicrography the whole problem of the differentiation of streptococci is rendered much more definite and accurate. We may mention the following examples to illustrate the difficulties and to impress the importance of this medium in differentiating the streptococcal group. Thus Warren Crowe has shown that a broth culture is never representative of the streptococci at the root of a tooth. Certain ones grow out to the exclusion of the others; thus, for example, one tooth extracted produced twelve varieties on his differential medium, whereas only three were found in the broth culture from the scraping of the apex of the tooth. In another case fifteen varieties of streptococci were cultured, and only one organism occurred in the broth. We mention Warren Crowe's medium in order to emphasize its utility as a differential medium for streptococci, as we feel this is not generally well known.—We are, etc.,

D. THOMSON.
R. THOMSON.

London, W.1, Jan. 16th.

THE TEMPERATURE IN PULMONARY TUBERCULOSIS.

SIR,—I am very grateful for the commendation and criticisms of Dr. Vere Pearson on January 12th (p. 80), and also welcome his references, because of the difficulty of finding them in the recent literature.

From 1921 to 1928, while I was medical superintendent of Creaton Sanatorium, I frequently attended meetings of the Society of Medical Superintendents of Tuberculosis Institutions, but I did not hear any discussion on the important subject of temperature. My paper was intended to give hints to beginners in the tuberculosis service and to interested general practitioners rather than to experts.

My contribution was originally entitled "Some points concerning the temperature in pulmonary tuberculosis," because it did not profess to cover the whole subject. It contained some observations on the history of thermometry, and reference was made to the admirable outline of the history contained in Dr. Varrier-Jones's book *The Significance of Temperature Variations in Tuberculous Disease*, but editorial exigencies compelled their withdrawal. In fact, the idea of the "plateau" and "valley" were borrowed from him for quite a different use; for this I hope he will forgive me.

I should like to clear up some of my "ambiguous points." As regards the time necessary for taking temperatures I was thinking more of the time of the overworked nurses rather than that of the patients. I would prefer that a nurse should insert the thermometer for a rectal temperature, in view of the possible risk of accident in a careless insertion by the patient. For the oral temperature, where each patient has his own thermometer, the nurse can go round and read the temperatures in rapid succession. I agree that "there is no such thing as a normal temperature" for all persons, and that is why I suggested that previous records for each patient should be obtained if possible. I had many female patients with a continued premenstrual rise of temperature lasting ten to fourteen days, but a week was about the average. Dr. Pearson takes this "normal" rise as a matter of course, but I could find no mention of it in the literature. The "febrile" premenstrual rise only is noted.—I am, etc.,

COLIN MILNE.

Banbury, Jan. 13th.

[1] *Annals of the Pickett-Thomson Research Laboratory*, vol. iii, et seq.

SIR,—The importance of a close study of the variations of the temperature of the body in pulmonary tuberculosis, especially in its chronic form, cannot be adequately and fully realized until extensive and exhaustive investigations have been made. Obviously Dr. Colin Milne's records and analyses are too sketchy and casual to help those who wish to understand the meaning of the changes of temperature and thereby to help their patients.

I have been studying the temperatures of chronic pulmonary tuberculosis since the discovery of tuberculin, by means of which we may at will produce temperatures of every kind and degree. I even venture to say that those who have not studied the fever phases induced by experiments with tuberculin under many conditions cannot realize the revelation that awaits them in this fascinating study. Of recent years I have taught many physicians to sense the music of a temperature chart as though it were a score of music written by a musical genius, and I would invite Dr. Colin Milne and Dr. Vere Pearson to come and learn for themselves at our institution what temperatures in chronic pulmonary tuberculosis mean, and how to create these entrancing charts for their own delight and the delight of their patients.

I must be candid and tell Dr. Colin Milne that his method of taking temperatures is but a jangle of discords; too many notes in the music are lost. He refers to a number of cases in which the temperatures have all been taken in the same perfunctory way. I fear that he is dealing with material he cannot control and his deductions may be open to criticism. It is not possible to learn much of temperature variations in pulmonary tuberculosis if one takes the temperatures only twice a day. Although Dr. Milne postulates that the temperatures must be determined with exactness he is satisfied with taking temperatures twice daily for three weeks and drawing conclusions thereon.

In my observations over some decades of years I have stipulated that the temperatures must be taken every four hours—even every two hours—and under conditions which are familiar to all my old pupils in Australia and my new pupils in England. Those who have studied with me in England will vouch for the thoroughness and trustworthiness of our method of taking the temperature, and I would invite all who wish to learn the lesson to be read from accurate temperatures taken according to our ideas to spend a few months at the Tuberculin Dispensary, 32, Fitzroy Street, W.1. Here we are producing at will temperatures in pulmonary tuberculosis, which on close study reveal to us some of the mysteries of tuberculosis and its laws of immunity and, still more, enable us to exploit tuberculin—the greatest discovery in medicine of modern times—so as to build up and strengthen the mechanism of immunity and thus give relief and hope of recovery to the myriads of human beings enmeshed in the coils of this insidious and treacherous disease.

When systematic and careful analyses have been carried out in conformity with the general principles I have followed, there will be no more talk of the advantages of rectal temperature records over mouth temperatures. Rectal temperatures, except in children, are as little required in chronic pulmonary tuberculosis as in other febrile conditions.—I am, etc.,

W. CAMAC WILKINSON, M.D.Lond.

London, W.1, Jan. 17th.

AMAUROTIC FAMILY IDIOCY.

SIR,—With reference to Dr. Stenhouse Stewart's article and interesting family tree of amaurotic family idiocy (January 19th, p. 101) I think Mendelism gives the answer to several of his questions. The disease is obviously a recessive characteristic, as otherwise two unaffected parents could not have affected children. It must therefore have occurred on the sides of both the parents (Wolff R. and Annie I.), who are of the Mendelian type DR. Rebecca is also a DR, and Lily, David, Jacob, Pauline, and Rachel are either DR or DD. The disease is such a rare one that the chances of a DR marrying into another tainted family are exceedingly small, hence the rarity of the occurrence in the second generation; nevertheless, this

happened in the case of Rebecca. Is she a cousin or more remotely a relation of her husband?

The answers to the questions are therefore: (1) It is exceedingly unlikely that Jacob's or Pauline's children will be affected, unless they have married near or distant relatives. (2) Rachel should be cautioned against such a marriage. (3) Rebecca should certainly have no more children unless she is willing to expect idiot children in the proportion of one in every four, always remembering that in a small series the laws of chance are such that two or more affected children may follow one another, as in the previous generation.—I am, etc.,

Sheffield, Jan. 19th. ROBERT PLATT, M.D., M.R.C.P.

TONSIL AND ADENOID OPERATIONS.

SIR,—As a general surgeon I should like to emphasize, in a very few words, what Mr. J. Aldington Gibb has said in your issue of January 19th (p. 132), on the subject of haemorrhage following tonsillectomy. He says, "Haemorrhage after the guillotine operation usually means that a piece of tonsil has been left behind." No truer words than these have been spoken on the subject, and I will go even further and say that haemorrhage after any operation for tonsillectomy usually means incomplete eradication of the tonsil, excepting, of course, "bleeders" in all their phases.

Many years ago I was a victim of "dissection" at the hands of perhaps the greatest man of the time, and I well remember coming out of the anaesthetic, which had lasted for an hour and a half, biting on a gag, and no less than three pairs of Spencer Wells forceps affixed to bleeding points in my fauces. On a holiday a fortnight later on board ship I had a severe haemorrhage from the fauces, and have since had tags of tonsil removed on two occasions. Though this operation might by some be referred to the "dark ages," yet the haemorrhage was due to imperfect eradication of the tonsil, and it does not in one whit contradict what Mr. Gibb has said.

Having performed many hundreds of these operations as surgeon to a children's hospital I have witnessed only two cases of severe haemorrhage, both due to a piece of tonsil being left behind. For this reason I think that what appears a simple operation to-day is not without risks of a serious kind, and it should be left to an expert.—I am, etc.,

Bradford, Jan. 19th. BASIL HUGHES.

SIR,—The importance of this subject and the sharp conflict of opinion expressed in your columns move me to take definitely and plainly a side in the controversy.

Despite the imposing array of contributors to the discussion who have proclaimed their adherence, for divers reasons, to the "let it rip" method of treating tonsil bleeding, I am bold enough to challenge their opinions and practice. Surgeons, as we all know, vary regarding their sensitiveness to haemorrhage, and the more sensitive encounter more haemorrhage; the less, less. Personally, I am afraid that in earlier years I belonged to the latter variety, until a succession of humiliating and most uncomfortable afternoons led to a sharpening-up of my reactions.

Haemorrhage, during and after operation for the removal of tonsils, sufficiently severe to blanch the patient, is not uncommon if the surgeon contents himself merely with gauze or other temporary pressure. But death therefrom is rare. When it does occur it is apt to escape the attention—the frank attention—of the surgeon's mind, by masquerading under the title of a death from "shock," or "delayed chloroform poisoning" (characterized, be it said, by the vomiting of large quantities of dark liquid). The young operator would do well, therefore, to make a point of ligaturing all bleeding points that do not stop after a reasonable amount of pressure by gauze or pressure forceps, just as he would similar points in an external neck wound. Why the tonsil wound should be exempted from the ordinary rules of operative surgery, and by what magic it is free from the risks of wounds elsewhere, I confess I do not understand, in spite of the firm and decided tone of the "let it rippers." The fear of ligatures setting up sepsis is a bogy and may be safely ignored.

Finally, let me say that my experience as an operator, the experience of more years than I care to number, leads me to agree with every word that Mr. Tilley has written.—I am, etc.,

London, W.1, Jan. 19th. DAN MCKENZIE.

SIR,—I should like to endorse the views expressed by Dr. Lindley Sewell in your issue of January 12th (p. 84). Practically bloodless tonsil enucleation can be achieved with the La Force guillotine. This scores over other two-bladed guillotines which I have tried in the past two years, in that a crushing force can be applied which is many times greater than that of any other type I know. Hence the efficient haemostasis. One of its defects is that the cutting blade must be carefully readjusted after each tonsil is removed, otherwise the sharp blade may be sent home first, which would negative the bloodless object of the operation. This unnecessary obtrusion of the cutting blade is a definite objection when one considers that its function is quite subsidiary. The tonsil could equally well be cut off the crushing blade with a pair of scissors.

I hope to publish shortly details of a new guillotine and technique which I have used for the past six months. I utilize the recoil of the crushing blade when the latter is released from its crushed stump to set back automatically the cutting blade. This simple, fool-proof device makes it impossible to close the instrument sharp blade foremost. The crushing and locking device is mechanically more simple and powerful, and practically instantaneous, being effected by one half turn of a lever. These features make it, I think, almost as easy to use as an ordinary guillotine.

With regard to haemostasis, my results are practically identical with those of Dr. Sewell. If Dr. Sewell were to incorporate the "non-skid head" in his instrument (*British Medical Journal*, October 20th, 1928) I believe he could still further lower the figure of 5 per cent. of adult tonsils in which he finds it necessary to resort to dissection.

My recollection of Mr. Irwin Moore's condemnation is that it refers particularly to the torsion-avulsion manœuvres, in which the tonsil is literally torn out of its bed. Such crude procedures have no parallel in other departments of surgery, and, in the circumstances, the adjective "unsurgical" would appear to be particularly mild.—I am, etc.,

London, W.1, Jan. 13th. O. POPPER.

SIR,—Mr. Stuart-Low informs us that he "can never understand" this, and that he has "thought out" that, and has "given much attention" to the other. He also informs us that he "said some time ago" something about chloroform. It would be more interesting for us to know how many operations he has done under chloroform with how many deaths, if any.—I am, etc.,

Kensington, January 20th. J. MCNAMARA, M.D.

ASTHMA.

SIR,—With Mr. Frank Coke's complaint in the *Journal* of January 19th (p. 133) I sympathize. The impression given by the joint letter which he criticizes is too lugubrious as to the prognosis of asthma. Extended experience only confirms what I wrote in 1913: "there is no distressing and disabling diseased condition more amenable to correct handling than asthma." Others have confirmed that statement and I hope will again confirm it, so I content myself here by adding (what I have also said before) that in 50 per cent. of asthmatics the ailment begins before the age of 16, and that of these at least 90 per cent. can be cured, and stay cured, if treatment be begun before that age and the patient is not permanently a mouth-breather. The percentage, of course, steadily diminishes with duration of the ailment, and especially in senile asthma, but the general statement above in inverted commas remains true.

The most important remedial agent is a way of life. Heredity and infections are important causal factors; but asthma is largely a disease of civilization and the indoor life, and it is largely by a rational ordered way of life it can be met. Nevertheless, the more research, and particularly biochemical research, we have the better; it is surprising that this has been so much neglected.—I am, etc.,

Glasgow, Jan. 20th. JAMES ADAM.

SIR,—Mr. Frank Coke has stated very clearly the mischievous effect of "the ancient parrot cry that there is no cure for asthma," which is a totally illogical perversion of the truth as expressed by Sir Humphry Rolleston, Lord Dawson, Dr. Hurst, and Dr. Fremantle that "there is not any one form of treatment which is effective in all forms of asthma." He refers to methods which have cured scores of cases, but strangely omits one from which the most gratifying results have been obtained—namely, the judicious treatment of the nose. No one who has acquainted himself with the experiments of Dixon on the etiology of asthma (*Trans. Path. Soc.*, London, vol. liv, p. 17, and *Journ. of Physiol.*, vol. xlv) can entertain any doubt as to the share which nasal disease can take in the production of the asthmatic "explosion," even if only as the "detonator" which fires the cartridge." In these experiments it was found that in the decerebrate animal contraction of the bronchial muscle could be brought about by irritation of the nasal mucous membrane, especially in the upper and posterior part of the septum.

There is ample clinical evidence that judicious nasal treatment (as Mr. Coke says of other procedures) has "led to such an amelioration of symptoms as many patients are satisfied to call a cure."—I am, etc.,

London, Jan. 21st. JAMES DUNDAS-GRANT.

SIR,—Mr. Coke appears to have misinterpreted the statement in the publicity campaign of the Asthma Research Council of which he complains. It did not state that there was no cure for asthma; it merely emphasized the fact that no "certain cure" had been discovered. As the editorial footnote to his letter in your issue of January 19th (p. 134) added, this is far less misleading than to announce that "a certain cure" for asthma had been found, and the position was accurately and concisely stated by "there is not any one form of treatment which is effective in all cases of asthma." Surely Mr. Coke will agree with this, even though he could have devised a better method of evoking the financial support of the public for a comprehensive scheme of research. The Asthma Research Council has, however, no cause to complain of the financial support it has obtained, so far, as a result of the Mansion House meeting on January 15th.—I am, etc.,

T. T. JEANS,
Surgeon Rear-Admiral.
Medical Secretary, Medical Advisory Committee.

London, S.W.1, Jan. 21st.

CARDIOSPASM OR ACHALASIA OF THE CARDIA.

SIR,—I wish to thank Dr. Hurst for his letter in your issue of January 12th (p. 83) replying to my questions in the previous issue, but the answers are not very convincing.

In the first reply he begs the question completely when he states that "cardiospasm or achalasia of the cardia is obviously a condition of the cardia and of nothing else." Merely to state the fact that two names, devised to express two opposed theories, both include the word "cardia," is no argument at all. It would be just as reasonable to say that because hysteria is so called, it must obviously be an affection of the uterus and of nothing else. My point is that neither name is entirely satisfactory, partly because a similar condition does occur in the oesophagus at a distance from the cardia and there appear to be no sufficient grounds for assuming a different pathology. Dr. Hurst says he has only met one such case, but I can add three others apart from those in the literature, and they are not great rarities.

I still find it difficult to believe that a feeble sphincter like the cardia could grip the mercury tube as firmly as the anal sphincter can grip the finger unless the cardia were greatly hypertrophied, but Dr. Hurst agrees that such hypertrophy does not occur. I have watched the x-ray screening of these cases on various occasions, and frequently, after some minutes, the opaque meal begins slowly to trickle through into the stomach, even without an eight inch column. In one case the barium meal at first passed into the stomach without any evidence of obstruction, and then the cardia closed and no more passed through for about five minutes. This would suggest an active closure rather than achalasia, but I never found any gripping of the mercury tube.

I am not well versed in mechanics, but I should have thought that, in his answer to question 5, the comparison with the safety valve of a boiler did not help his theory of achalasia. Surely the action of a safety valve more nearly resembles an active contraction—or spasm—than a failure of relaxation. When the pressure within the boiler rises sufficiently high steam escapes, but as soon as the pressure falls there is an active closure of the valve brought about by a spring or other means. When the cardia is forced open by the weight of more than eight inches of food in the oesophagus, how can an "inability to relax" make it close again?

Dr. Hurst does not deny the possibility of spasm of the cardia or of other parts of the oesophagus, and I do not suggest that achalasia of the cardia does not exist. Indeed, it would seem to be one of the necessary results of complete degeneration of Auerbach's plexus. It appears to me that the condition is an affection of the oesophagus, as a whole or in any part, and that both names at the head of this letter attempt to fix the lesion at one particular part—the cardia.—I am, etc.,

London, W.1, Jan. 14th. C. C. BEATTY.

LIPIODOL.

SIR,—I get my lipiodol from a French firm, and as they advertised a special lipiodol syringe I applied for one on approval. It had a screw piston action and cannulae of different sizes screwed on to it, but there were no trocars supplied, showing that on the Continent and elsewhere where this syringe was used the operator had to cut right into the trachea. I take it that what your reviewer meant in his criticism of the book by Drs. Chandler and Burton Wood (January 5th, p. 21) was that a little slit should be made in the anaesthetized skin, the cannula and trocar being then introduced and pushed home. I am using Dr. Chandler's cannula and trocar now, and agree with your reviewer about the slit, as it accelerates the operation and causes less manipulation. I have just injected lipiodol into a patient who has a left side thoracoplasty with a discharging sinus, through which a good amount of pus periodically comes, and it will be interesting to see if the sinus is discharging from a bronchus or not.

Lipiodol will be useful in a small percentage of cases, but the operation is not pleasant to the patient, and the one thing against the use of the scalpel is that it adds to the psychological and unavoidable thought that he is "feeling his throat cut," as one patient expressed it to me.—I am, etc.,

Winsley, Jan. 20th. J. D. MACFIE.

DENTAL CARIES AND VITAMIN D.

SIR,—For more than two decades I have had under my professional care as school dentist many thousands of children for the whole period of their school lives. One lesson I have learned is to distrust these cases of so-called "arrested caries," and, from the frequency with which, after a time, extraction of such teeth has to be resorted to, I very much doubt whether the "arrest" is ever complete and final. This view, I think, finds some support from the Mellanby-Pattison paper, for the writers tell us that even in those sections of teeth where caries appeared to be completely arrested the dentinal tubules contained micro-organisms—though these latter, most obligingly, were apparently inactive. Also in Case 1 (of K. C., aged 3½) a tooth was extracted though arrest was taking place, and on being examined microscopically showed organisms "still present in patches." Now why, in so young a child, was that tooth extracted? It is a fair question to ask, and it ought to be answered.

If all these cases were followed up, not only for weeks or months, but for years, it is more than probable that the "bacterial onslaught," so far from being completely arrested, would be found still possessed of great powers of mischief. Was it not so in the case of K. C., aged only 3½?

Most of the points have already been dealt with by your earlier correspondents, Dr. Harry Campbell, Dr. Sim Wallace, and Mr. Barwise, with whose views I am in

complete accord. There is, however, one other feature of the investigation to which I feel bound to call attention. The children concerned were very young, and all had eight or nine badly carious teeth. Apparently it was found possible to probe the carious cavities with sufficient force to record in some way the degree of resistance met with. Where, then, was the difficulty, with such well-controlled children, of deciding whether certain teeth were dead or alive? Why could not the usual tests be applied to determine the point? It was evidently regarded as important, but it was found "impossible in many cases" to be sure of one way or the other. May I suggest that in a purely dental investigation, sponsored on the one part by the Dental Board, such an admission is truly surprising.

For my part I should rejoice if a short cut to the prevention and cure of dental caries could be found; but I know too well how it is brought about to have any doubt as to the right lines on which to proceed, if it is to be avoided—and in this connexion it would be difficult to overstate my indebtedness to the teaching and writings of Dr. Sim Wallace.—I am, etc.,

London, S.W., Jan. 13th. FREDK. BREESE.

THE DOCTOR AND CHEMICAL WARFARE.

SIR,—In your annotation on an article by Dr. Lockhart in the January *National Review* it is suggested that attempts to prepare the medical profession to meet attacks upon the civil population in the guise of chemicals from the air should await the discovery of an antidote to injury caused by poison gas. Dr. Lockhart's admirable article suggests both the necessity for an organization to meet an attack and the form the organization should take. Your suggestion is for treatment; his is for prevention.

The enormous number of persons likely to suffer in an attack upon one of our huge and densely populated towns may be gauged by the effect of the first use of poison gas upon unprepared troops at Ypres in 1915, when 5,000 were killed in five minutes and a very large number of casualties occurred. Surely to organize beforehand is a better way to prevent the terrible panic and loss of life certain to follow a gas attack from the air than to await the arrival of an antidote, however valuable; since several gases are likely to be employed in the attack, and there can be no certainty as to the nature of any of them, the chance of getting any such antidote to the expected casualty in time to be of any value is unlikely, and its value problematical.

In my manual on the protection of the civil population in chemical warfare, published by the St. John Ambulance Association (see *Journal*, December 29th, 1928, p. 1202), there is a description in a simple form of the principles and some of the details of an organization very similar to that of Squadron Leader Lawrence which was mentioned in your annotation. I venture to suggest that the subject as a whole is a very fitting one for the British Medical Association to take up; it might issue some practical scheme for the use of medical practitioners, in conjunction, of course, with the War Office Department for Chemical Warfare. There is much preparation to be done, and the available time may not be more than is necessary.—I am, etc.,

Wokingham, Jan. 14th. F. R. HUMPHREYS.

RADIUM AND CANCER.

SIR,—The letter which appeared in your issue of January 5th (p. 42), over the signature of the professor of physics at Trinity College, Dublin, on the subject of priority of claim to the radium needle technique, is timely. When I was working in the cancer research laboratories of the Middlesex Hospital in 1913 and 1914 Dr. W. C. Stevenson, during his visits to us, discussed the technique of treating malignant disease by small doses of radium put up in needles. His paper on this subject was read with great interest.

It is a pity that some of those who have been converted to believe in the value of radium therapy since the termination of the war should only quote our Continental colleagues as the originators of this particular technique.—I am, etc.,

London, W.1, Jan. 21st. A. CLIFFORD MORSON.

MEDICAL FOUNDATIONS.

SIR,—In your issue of January 5th (p. 40) Dr. Henry Robinson directed attention to two most excellent medical charities—namely, the Royal Medical Benevolent Fund and Epsom College. May I bring to the notice of your readers a third, the Society for Relief of Widows and Orphans of Medical Men, which is older than either of the two mentioned above, having been founded in 1788 and incorporated by Royal Charter in 1864? The objects of this society are to help the necessitous widows and orphans of its deceased members, and the income of the society enables it to make substantial grants yearly to those in need. Membership is open to any registered medical practitioner who at the time of his election is resident within a twenty-mile radius of Charing Cross. The privileges of membership are, however, retained should a member remove outside the area. The annual subscription is very small—£2 2s., £3 3s., £4 4s., according to the age of the candidate. Should any medical man who resides within the area be desirous of joining the society, or any benefactor desire to give a donation or bequeath a legacy, I shall be pleased to send him full particulars.—I am, etc.,

EDWARD J. BLACKETT,
Secretary.

Society for Relief of Widows and Orphans of Medical Men, 11, Chandos Street, Cavendish Square, W.1, Jan. 10th.

Obituary.

DR. FRANCIS WILLIAM HARTLEY, whose death occurred from pneumonia, while on holiday at Llandudno, on January 1st, at the age of 63, retired from practice at Heywood, Lancashire, three years ago, after spending the greater part of his professional life in that, his native town. He received his medical education at Owens College, Manchester, and obtained the diplomas M.R.C.S., L.R.C.P. in 1893. After serving as an assistant in various towns for several years he began practice on his own account in Heywood. During the war he held a commission in the R.A.M.C. and served for a time in the South of England. He was keenly interested in professional affairs, and in the Rochdale and District Medical Society was president in 1913–14 and vice-president in 1920–21. He was also a member of the British Medical Association. We are indebted to a colleague for the following appreciation: Although a very loyal member of the Association and a regular attendant at meetings, Dr. Hartley could not be persuaded, owing to his retiring disposition, to accept any office, but, nevertheless, he always exercised a very real influence among his colleagues, having a high ideal of duty and professional behaviour, which he maintained with unfailing courtesy. The loss of his son at the age of 16, last spring, was a severe blow, borne with typical fortitude. Dr. Hartley is survived by his widow and one daughter. His funeral on January 3rd at Heywood was attended by several of his colleagues and by a large gathering of his former patients, who came to mourn the passing of a "very perfect gentleman."

We regret to record the death from septic pneumonia of Mr. JOHN LISTER WRIGHT, which took place at his home at Southsea on January 4th. In the Portsmouth district, where he had practised for many years, he was very well known and highly respected, and had been, at an earlier period, equally prominent in medical circles in Derby. He was born in 1859 at Launceston in Cornwall—where his father was in practice—and subsequently removed with his family to Wynberg, near Capetown, in South Africa, where he received his early education at the Diocesan College. He afterwards came to England, and pursued his medical studies at St. Bartholomew's Hospital, obtaining the diplomas M.R.C.S.Eng. and L.R.C.P.Ed. in 1884. A few months afterwards he returned to South Africa, and was appointed assistant resident surgeon to the New Somerset Hospital at Capetown. Two years later he joined his uncle, Dr. F. W. Wright, in Derby, and later succeeded him in practice in that town. Mr. Lister Wright had a preference for surgical work, and he was before long

appointed surgeon to the Derbyshire Hospital for Sick Children, an office which he held for about five years. Later he was elected to the surgical staff of the Derbyshire Royal Infirmary, but his work in this capacity was cut short by the failure of his health, which necessitated his removal to the South of England. Mr. Wright obtained a commission in the R.A.M.C. on the formation of the Territorial Force, and during the war served as a captain with the 5th Southern General Hospital at Portsmouth. He was medical officer to the Portsmouth and Isle of Wight Home and School for the Blind for twenty-seven years. His connexion with the British Medical Association extended over a considerable period, and from 1904 to 1907 he was a member of the Executive Committee of the Portsmouth Division. Although his interest in professional affairs was keen, he was of a somewhat retiring nature, and his kindly disposition and idealistic outlook led him to avoid controversy and conflict. At the funeral service in Portsmouth Cathedral Church the Bishop of Portsmouth paid a notable tribute to the personal and professional qualities of Mr. Lister Wright. Among those present were many members of the medical profession, including Dr. F. C. B. Gittings, honorary secretary of the Portsmouth Division of the British Medical Association. Mr. Wright leaves a widow and one daughter.

Dr. ROBERT GEORGE DE LA POER BERESFORD, whose death occurred on January 14th, at the age of 86, had spent about sixty years in practice at Oswestry, and had been mayor of that town for two years. He received his medical education at the Ledwick School of Medicine in Dublin and at the University of Glasgow, and in 1865 obtained the diplomas L.R.C.P. and L.R.C.S.Ed.; four years later he obtained the diploma L.R.C.P.Lond., and in 1871 he graduated M.D.Glas. Many years afterwards he renewed his studies, and so recently as 1916 obtained the D.P.H. of Liverpool University. After qualifying he held resident posts in Dublin, at Cork Street Fever Hospital and at Mercer's Hospital, subsequently commencing practice at Oswestry. Dr. Beresford was closely associated with the work of a number of institutions in that area; he was at one time physician to the Oswestry Joint Infectious Hospital, surgeon to the Cambrian Railway Company, and at the time of his death was consulting surgeon to the Oswestry Dispensary and the Oswestry and Ellesmere Cottage Hospital. He had completed fifty years' service in this capacity when, in 1927, he resigned his part-time appointment as medical officer of health for the Oswestry rural and urban districts. His association with the auxiliary forces as a medical officer covered many years also; he received the Volunteer Decoration, and retired after reaching the rank of surgeon-colonel. During the war he served as senior surgeon at the Oswestry Auxiliary Military Hospital. He took a keen interest in medical affairs, and was a Fellow of the Society of Medical Officers of Health, of the Royal Institute of Public Health, and of the Chemical Society. He was also an honorary serving brother of the Order of St. John. His many services to Oswestry and district were recognized in 1927, when he received the freedom of the borough. He was also a justice of the peace for the county of Salop.

Dr. DAVID JAMES GRAHAM, who died at a sanatorium in Aberdeenshire on January 14th, after a long illness, was a well-known Edinburgh practitioner. Not long after his return from military service in France Dr. Graham contracted a disorder in the throat which compelled him to lay aside active work, and despite his pursuit of health in various places the disease ultimately spread to the lungs and caused his death. He received his medical education at Edinburgh University, and graduated M.B., C.M. in 1895, proceeding M.D. in 1899. At the time of graduation he obtained the James Scott scholarship in midwifery, and he was afterwards successively assistant medical officer at the City Hospital for Infectious Diseases, Edinburgh, and resident medical officer in Chalmers Hospital, Edinburgh. He obtained the Membership of the Royal College of Physicians of Edinburgh in 1898, proceeding to its Fellowship in 1901. After commencing general practice, he was assistant to Dr. Haig Ferguson for several years. Dr. Graham gradually established an extensive practice, and held several public appointments, including those of medical officer to Donaldson's Hospital and to George Heriot's School, and surgeon apothecary to His Majesty's household at Holyrood Palace. For a short time he acted as physician to the Royal Public Dispensary, Edinburgh. Shortly after the formation of the Territorial Force he joined the 3rd Lowland Field Ambulance, and was later transferred to the 2nd General Scottish Hospital as registrar, in which capacity he served for some three years during the war before proceeding to France. In the neighbourhood of St. Omer and at Etaples he acted as commanding officer of the 58th and 11th Scottish General Hospitals, and for his services was awarded the O.B.E. He received the Territorial Decoration, and retired from the force with the rank of brevet colonel. He took an active interest in the V.A.D. service and Red Cross work before the war, and on his return from military service this interest was continued in the reorganization of the Red Cross work on a peace footing. His interest in professional affairs was not limited to any one aspect; he was a Fellow of the Edinburgh Obstetrical Society and of the Edinburgh Medico-Chirurgical Society, and a member of the Royal Medico-Psychological Association. He was also for many years a member of the British Medical Association. The sympathy and affection of many friends and patients, gained by his early work in practice, were increased by his vain search for health in recent years, and his death will be deplored by many friends in Edinburgh. Dr. Graham is survived by a widow, a son, and a daughter.

Dr. ARTHUR HENRY HEADLEY HUCKLE, who died suddenly on January 13th, after a long period of ill health, was well known and deeply respected in East Sussex, where he had been in practice in Hastings for many years. Born in Australia in 1870, he came to England at an early age, and was educated at Dulwich College, pursuing his medical studies subsequently at Guy's Hospital. In 1895 he obtained the diplomas M.R.C.S.Eng., L.R.C.P.Lond., and L.S.A., having, a year before, qualified as a Licentiate in Dental Surgery in the Royal College of Surgeons. Later he was called to the Bar as a member of the Middle Temple, and in 1910 he obtained the D.P.H. of the English Royal Colleges. In Hastings Dr. Huckle built up an extensive practice, and held a number of public and other appointments, the nature of which will serve to indicate the wide range of his interests. He was consulting physician to the Hastings Union Infirmary, medical superintendent of the Hastings Borough Sanatorium, honorary pathologist and honorary dermatologist to the East Sussex Hospital, and medical officer to the Hastings and East Sussex Venereal Disease Clinic. He was also a member of the British Medical Association and of the East Sussex Medico-Chirurgical Society. Among outside affairs Freemasonry was perhaps his chief interest. He was a justice of the peace. We are indebted to Dr. William Gover for the following tribute: The sudden death of Arthur Headley Huckle has come as a personal grief to many of his colleagues, in whose affections and esteem he held a high place. He had been in poor health for some months, but the end came unexpectedly. Huckle was a man of very wide knowledge. He had qualified in dentistry and had been called to the Bar, while years of general practice, illuminated by constant study, had given him a vast experience, which he placed at the disposal of his friends in a spirit of humility and self-effacement that was entirely characteristic. Of late years he had somewhat contracted the sphere of his activities, and devoted himself mainly to pathology, fevers, and venereal disease. In the laboratory he was a pioneer, for ever trying out some new line of treatment or fresh method of diagnosis, with all the enthusiasm of youth. His work in the sanatorium was on the same plane. His treatment of fevers always gave confidence to brother practitioners and to patients alike, and they knew that any fresh discovery in medicine would be immediately available. If Huckle could not save a case no one else could have done so. It was perhaps in the

venereal diseases clinic, where the qualities of a gentleman are most required, that he seemed particularly to shine, and where his sympathetic understanding, kindly tact, and vast knowledge of medicine had their widest scope. It would hardly appear possible to fill the gap he has left.

VITAL STATISTICS FOR ENGLAND AND WALES, 1928.

We are indebted to the Registrar-General for the following statement regarding the birth rates and death rates and the rates of infantile mortality in England and Wales and in certain parts of the country during 1928. The statement is issued for the information of medical officers of health. The birth rate and infantile mortality rate for London have been provisionally corrected for transfers.

ENGLAND AND WALES.

Birth Rate, Death Rate, and Infantile Mortality during the Year 1928 (Provisional Figures).

	Live Births per 1,000 Population.	Deaths per 1,000 Population (Crude Rate).	Deaths under One Year per 1,000 Live Births.
England and Wales (on 1928 estimated population)	16.7	11.7	65
107 county boroughs and great towns, including London (on 1927 estimated population)	16.9	11.6	70
156 smaller towns (populations from 20,000 to 50,000 in 1921—on 1927 estimated population)	16.7	10.6	59
London (on 1927 estimated population)	15.9	11.6	67

The death rate for England and Wales relates to the whole population, but that for London and the two groups of towns to the civil population only.

England and Wales.

The birth rate is 0.1 per 1,000 above that of 1927. The death rate is 0.6 per 1,000 below that of 1927, and only 0.1 per 1,000 above the lowest recorded (1923 and 1926). The infant mortality rate is the lowest on record, 4 per 1,000 births below that of 1923.

Universities and Colleges.

UNIVERSITY OF OXFORD.

A RHODES Travelling Fellowship has been awarded to Malcolm H. MacKeith, M.D., Fellow of Magdalen College.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on January 18th the following medical degrees were conferred:

M.B., B.CHIR.—S. W. Savage, F. Smith.
B.CHIR.—L. Foulds, E. Clayton-Jones, A. J. Dix-Perkins, H. F. Bateman, L. T. Hilliard, J. C. F. Lloyd-Williamson.

UNIVERSITY OF DUBLIN.

TRINITY COLLEGE.

AT the second winter commencements, held on January 19th, the degree of M.D. was conferred on H. E. Murray of the Indian Medical Service.

The Services.

NAVAL MEDICAL COMPASSIONATE FUND.

AT the quarterly meeting of the directors of the Naval Medical Compassionate Fund, held on January 22nd, when Surgeon Vice-Admiral Arthur Gaskell, C.B., O.B.E., Medical Director-General of the Navy, was in the chair, the sum of £100 was distributed among the several applicants.

DEATHS IN THE SERVICES.

Surgeon Lieutenant Henry Johnson Scott, R.N., was recently drowned at Shanghai. He was educated at Glasgow University, where he graduated as M.B. and Ch.B. in 1925, took a short service commission in the navy on July 9th, 1926, and was posted to H.M.S. *Cricket*, on which he was serving at the time of his death, on September 22nd, 1928.

Major Alexander Oswald Cowan Watson, R.A.M.C.(ret.), died suddenly in Edinburgh on January 4th, aged 70. He was born in Bombay on November 7th, 1858, the second son of the late Rev. Alexander Boog Watson, LL.D., of Cardross, and was educated at Edinburgh University, where he graduated as M.B. and C.M. in 1883, after taking the L.R.C.S. and P.Ed. in 1882, and subsequently took the F.R.C.S.Ed. in 1889 and the B.Sc. in public health of Edinburgh in 1897. He also studied in Aberdeen, London, and Vienna. Entering the army as surgeon on February 5th, 1887, he became major after twelve years' service, and retired on September 5th, 1908.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

BOTH Houses of Parliament assembled on January 22nd to resume a session which may end with a dissolution about Whitsuntide. In the Commons three more days were assigned to the Committee stage of the Local Government Bill. Discussions were arranged in the House of Lords on de-rating and on the Channel tunnel.

A meeting of the Parliamentary Medical Committee was summoned for January 23rd. The business proposed was discussion of the public health clauses of the Local Government Bill. An application suggesting a conference on the bill was before the Committee from the Society of Medical Superintendents, as was also a proposal from the National Council of Social Service for an interview with the Committee about prescribing under the National Health Insurance Act.

Local Government Bill.

Consideration of the Local Government Bill in committee was resumed in the House of Commons on January 22nd, this being the fifth allotted day under the time-table motion. On Clause 55, which gives relief from rates in respect of industrial and freight transport hereditaments, Mr. BRIGGS moved an amendment to exclude from the benefits of de-rating breweries, distilleries, and tobacco factories. Mr. CHAMBERLAIN resisted the amendment. Miss WILKINSON, in supporting the amendment, said that the common sense of the country, and especially of the women, would be against handing over this public money to the liquor and tobacco industries, when the Government was cutting down the grants for maternity and child welfare. The grants for milk and nursing mothers were also being reduced. Yet this was at the moment when the Queen had written to the newspapers to say that she was disturbed by the appalling increase in deaths in cases of motherhood. The amendment was rejected by 84 votes. Clauses 56 to 67, which were subsequently passed, dealt largely with adaptations of enactments.

Slum Clearance Schemes.—Sir KINGSLEY WOOD, on January 22nd, told Commander Kenworthy that between April 1st, 1925, and December 31st, 1928, the latest date for which particulars had been furnished, 8,540 buildings had been acquired for demolition, 6,002 buildings had been demolished, and 6,949 new dwellings had been erected in connexion with slum clearance schemes. Approximately 31,000 persons had been rehoused in these new dwellings. Commander KENWORTHY asked if there was any prospect of these operations being expedited. Sir KINGSLEY WOOD replied that local authorities were displaying more vigour in slum clearance schemes. Sir J. GILMOUR, replying to Mr. Stephen, said that the total number of houses completed in Glasgow under slum clearance schemes was 996 in 1926 and 838 in 1927. The number of slum houses in the city remaining to be dealt with was estimated to be 13,000.

Medical News.

AT the meeting of the Royal Sanitary Institute to be held at 90, Buckingham Palace Road, S.W., on Friday, February 1st, Dr. F. R. Humphreys will open a discussion on the civil population and chemical warfare. The chair will be taken by the Earl of Halsbury at 5 p.m.

A POST-GRADUATE course in orthopaedic surgery will be held at the Royal National Orthopaedic Hospital, 234, Great Portland Street, W.1, from March 11th to 23rd, with lectures and demonstrations daily. Further particulars may be obtained from the secretary of the Hospital or from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

THE Fellowship of Medicine and Post-Graduate Medical Association announces that Mr. Malcolm Hepburn will give a lecture on "Some apparent difficulties of general practitioners in ophthalmic work" at the Medical Society of London, 11, Chandos Street, Cavendish Square, W., on Monday, January 28th, at 5 o'clock. On the following day, at 4.30 p.m., Dr. Batty Shaw will give a clinical demonstra-

tion at the Brompton Hospital for Consumption, and at 4 p.m. Mr. Rodney Maingot will lecture on "The injection treatment of varicose veins," with a demonstration of the methods and results in over fifty cases, at the Royal Waterloo Hospital. Dr. R. A. O'Brien will demonstrate the prophylactic and therapeutic value of vaccines and serums in general practice at the Wellcome Museum of Medical Science, 33, Gordon Street, W.C., on Wednesday, January 30th, at 4 p.m. There is no fee for attendance at these lectures and demonstrations. At the Prince of Wales's General Hospital a two weeks' intensive course in medicine, surgery, and the specialties will begin on January 28th, while from January 29th to February 2nd a series of lecture-demonstrations in psychological medicine will be given at the Bethlem Royal Hospital. Special courses beginning in February will deal with gynaecology, dermatology, diseases of the chest and of children, and neurology. Detailed syllabuses and information regarding the general course may be had from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

THE new recreation and lecture rooms at the Queen Mary's Home for St. Bartholomew's Nurses were opened by Sir Kynaston Studd, Lord Mayor of London, on January 17th. The new rooms lie immediately behind the main buildings of the home, which provides accommodation for 312 nurses and superintendents.

WESTMINSTER HOSPITAL has received a cheque for £2,000 from an anonymous donor towards the erection by the hospital of scientific laboratories in connexion with the new radium annexe to be opened shortly.

THE Queen has given her consent to the new wing of the Elizabeth Garrett Anderson Hospital being named "The Queen's Wing." At the official opening of the hospital in the spring she will receive the purses and casket of jewels that are at present being collected. It is intended to utilize the proceeds of the sale of the jewels for the endowment of a bed. The new building has already been completed and equipped, and was recently dedicated.

AN appeal has been issued for financial support for the Industrial Health Education Society, signed by Sir Humphry Rolleston, the honorary president. The society, which was formed about three years ago, exists to provide information and advice to industrial workers on occupational diseases, personal hygiene, general health, and accident prevention largely by means of lectures by medical men. Its work has gained a wide measure of support among members of the medical profession, employers of labour, and representatives of employees' organizations. Several pamphlets have been prepared and circulated. An account of the activities of the society was given in the *Journal* of April 7th, 1928 (p. 605). Hitherto no request has been made for outside assistance, but the expansion of its work has made it necessary to raise the sum of £5,000 to meet the demands made upon it. Communications regarding the appeal or the work of the society should be addressed to the general secretary, Mr. James Mackenzie, 84, Kingsway, W.C.2.

THE late Mrs. Sowerby of Cumwhinton, near Carlisle, has left the residue of her estate, which will probably amount to about £6,000, to the Cumberland Infirmary.

THE second congress of the German Society for the Investigation of the Circulation will be held on March 4th and 5th at Bad Nauheim, when papers will be read on the signs of age and wear in the vessels, by Dr. Gruber of Göttingen, and on oedema and its treatment, by Dr. Nonnenbruch of Prague. Further information can be obtained from Dr. Arther Weber, Nauheim.

THE fourth Congress of Industrial Medicine will be held at Lyons on April 3rd, 1929, when the following subjects will be discussed: (1) silicosis, introduced by Dr. Mavrogordato (South Africa), Professor Boehme (Germany), Professor Irvine (South Africa), Professor E. L. Collis (Great Britain), Professor Thiele and Professor Sternberg (Germany); (2) cataract as an industrial disease, introduced by Professor Elschnig (Czechoslovakia) and Professor Rollet (France); (3) endocrine organs and intoxications, introduced by the Italian Professors C. Biondi, L. Ferranini, and N. Prude. Further information can be obtained from the secretary, Dr. Mazel, 54, Avenue de Nouilles, Lyons.

THE thirty-third congress of French-speaking alienists and neurologists will be held at Barcelona from April 3rd to 9th, under the presidency of Dr. Lalanne, medical superintendent of the Mareville Asylum (Meurthe-et-Moselle), and Dr. Jimeno-Riero, director of the National Asylum at Saragossa. The following subjects among others will be discussed: hereditary syphilis in the etiology of mental disease, sensory symptoms in disseminated sclerosis, and psychiatric examination of criminals.

AN International Congress of Medical Women will be held in Paris from April 11th to 13th.

THE second international congress on malaria will be held at Algiers from May 19th to 21st, 1930, simultaneously with the celebration of the fiftieth anniversary of Laveran's discovery of the *Plasmodium malariae*. Further information can be obtained from the General Secretary, Institut Pasteur, Algiers.

THE following appointments have recently been made in the French faculties of medicine: Dr. Labat as successor of Professor Barthe in the chair of toxicology and hygiene, and Dr. Henri Bonnin as successor of Professor Le Dantec in the chair of colonial medicine and tropical diseases at Bordeaux, Dr. Carrière, professor of children's diseases, as successor of Professor Lemoine in the chair of clinical medicine; and Dr. Minet, professor of therapeutics, as successor of Dr. Carrière in the chair of children's diseases at Lille.

THE Academy of Sciences, Medical Faculty, and Medical Society of Vienna have jointly set up a committee to arrange for the celebration, on April 26th, of the centenary of the birth of the celebrated Vienna surgeon, Theodor Billroth, who died in 1894.

THE Health and Cleanliness Council has published two excellent little pamphlets—*Health and Beauty*, by Miss Edith A. Cocher and Dr. Elizabeth Foley, and *Keep Fit*, by Colonel R. J. Blackham, M.D., and Mr. George H. Green—intended for distribution to girls and boys respectively. Supplies are offered free of charge to teachers whose charges are about to leave school and to the leaders of juvenile clubs and organizations. Both booklets are clearly written and brightly illustrated, and contain a wealth of common sense and practical advice. They are commendably free from the error of "preaching," which young people are quick to detect and resent. Inquiries about supplies should be addressed to the secretary of the Council, 5, Tavistock Square, London, W.C.1.

EDWARD ARNOLD AND CO. announce for early publication a second and enlarged edition of Professor Robert Muir's *Textbook of Pathology*.

IN a supplement to the issue of *Nature*, dated January 19th, is published an abridged and revised version of Professor A. E. Boycott's presidential address on filterable viruses, delivered on October 16th, 1928, before the Section of Pathology of the Royal Society of Medicine.

WE have received the first issue of a new monthly journal entitled *Le praticien du Nord de l'Afrique*, published under the editorship of Dr. L. Pron at Algiers, which already possesses two other medical journals—*L'Algérie médicale* and *La Revue générale de médecine et chirurgie de l'Afrique du Nord*. The issue contains original articles on pneumotomy in gangrene of the lung, treatment of gastric atony, synechiae of the nasal fossae and their treatment by diathermy, pleural eclampsia in artificial pneumothorax, clinical notes, abstracts from current literature, and reviews of books.

THE *Year Book* for 1929 of the United Kingdom Alliance contains, in addition to a variety of material relating to the temperance question and relevant statistical matter, an interesting article on "The place of the alcohol question in social hygiene," by Sir Arthur Newsholme, who discusses the effects of the use of alcohol particularly in relation to health. The *Year Book* may be obtained from the office of the Alliance, 1, Victoria Street, S.W.1, price 2s.

THE Alvarenga prize of 300 dollars offered by the College of Physicians of Philadelphia for the best original work on any subject in medicine will be awarded on July 14th. Competitors should send in their essays to the secretary, Dr. John Girving, 19, South 22nd Street, Philadelphia, by May 1st.

A GIFT fund amounting to over £280,000, raised by the Swedish people in celebration of the seventieth birthday of King Gustaf V, is to be devoted to subsidizing a campaign against cancer. Six grams of pure radium, costing £63,000, have been purchased for distribution to various centres under the direction of Professor Goesta Forsell, and with the remainder of the fund it is intended to pay for the technical equipment of institutions engaged in cancer research.

MAJOR JOHN HERBERT BANKES, late R.A.M.C., has been appointed a deputy lieutenant for the County of London.

DR. CUNÉO has been elected president of the Société de Chirurgie, and Professor F. Besançon president of the Société Médical des Hôpitaux de Paris, for 1929.

THE tenth salon des médecins, organized by Dr. Paul Rabier for the exhibition of pictures, sculpture, engravings, and decorative art by medical and dental practitioners, veterinary surgeons, pharmacists, students, and their families, will be held at the Cercle de la Librairie, 117, Boulevard St. Germain, Paris, from April 21st to 30th.

A BELGIAN society of gastro-enterology has recently been founded at Brussels, under the presidency of Dr. Georges van Damme.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the *British Medical Journal* are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:
EDITOR of the *British Medical Journal, Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone 24361 Edinburgh).

QUERIES AND ANSWERS.

HOUSE AND SURGERY.

"D. X.," who is about to have a house built with surgery attached, would be glad of practical information on this matter from any doctor with recent similar experience.

TREATMENT OF DEAFNESS.

"W. D. H." invites suggestions for the treatment of a very deaf man, aged 50. The blood pressure ranges between 120/240 and 140/300. The Wassermann reaction is positive, but there is no history of infection, which probably dates back at least six years. No improvement followed the administration for one month of potassium iodide gr. xlv, with fractional doses of calomel and liq. hydrarg. perchlor. daily, followed by six ten-daily injections of 914 intravenously and bismuth and thiosulphate intramuscularly. The deafness is increasing. The patient is not very tolerant of arsenic, the doses of which ranged from 0.15 to 0.45 gram. He is now taking 60 grains of potassium iodide daily. The urine shows a slight but definite trace of albumin, and the blood pressure is 130/260.

PAIN IN VARICOSE VEINS.

DR. ADA MCLAREN (London, W.1) writes: I think Dr. Duncan Greig would find the result satisfactory if he advises ultra-violet therapy in the case he writes about of pain in varicose veins. I have not had a failure during the four years I have used a tungsten lamp for that condition.

INCOME TAX.

Car Transaction.

"T. B. E." a year or two ago purchased a second-hand R 12-h.p. car for £200. In March of last year he sold it for £40 and bought a 14-h.p. M car for £250. He is now on the point of selling the M car for £76 and buying a 16-h.p. A car for £315; both transactions fall in the same financial year. What should he be allowed?

*** He cannot claim for the cost of improving his car equipment, but nominal horse-power is only one point for consideration out of several, and an increase in horse-power does not *necessarily* connote an increase in capital outlay. The allowances due are as follows:—*First transaction:* £200−£40=£160. There was some capital outlay here, as the first car was second-hand. *Second transaction:* £250−£76=£174. It is clear that there was capital improvement here. Taking the series of transactions as a whole "T. B. E." has expended £200+£250+£315=£765, and has received £40+£76=£116—that is, his net expenditure has been £765−£116=£649. The two allowances to be made are £160+£174=£334, which sum deducted from £649 leaves £315, the price of the car on which no allowance has yet become due.

LETTERS, NOTES, ETC.

RISK OF INFECTION FROM WASHING APPLIANCES.

DR. LACHLAN GRANT (Ballachulish) informs us that he has addressed to the chief medical officer of the Health Department of Scotland an "open letter" on some causes of the spread of infectious diseases and their prevention, in which he seeks to indicate the dangers to health associated with the use of the ordinary types of earthenware wash-hand basin (as commonly placed in bedrooms) and of lavatory wash-basin. Dr. Grant points out that in both types deposits of dirt of many kinds are frequently to be detected; even the lavatory type of basin, fitted with hot and cold water taps, is by no means satisfactory. A deposit is often left at the level of the water surface, which mixes with the clean water placed in the basin by the next user. Even the practice of allowing the water to run while washing does not, he considers, give much greater security from micro-organismal infection, and ordinary cleansing measures are not sufficient to ensure sterilization. Dr. Grant has carried out exhaustive examinations of lavatory basins in common use; on microscopical examination, following the centrifuging of the basin fluids, much filthy matter was detected, and bacteria of the cocci, bacilli, and spirilli classes were observed. In bacteriological tests, with culture media inoculated direct from the basins themselves, apart from the contaminating micro-organisms, like the *Bacillus subtilis* and numerous moulds, the two predominating growths were the ordinary pus-forming organisms—*Staphylococcus pyogenes* and *albus*—and the *Bacillus coli*. A Gram-negative coccus, resembling the *Micrococcus catarrhalis*, was found, and a bacillus of the diphtheroid type. Dr. Grant suggests that the present methods of washing make for infection by the nasopharynx—the channel by which most infectious diseases are spread. His remedy is the fitting of all wash-basins with a raised tap (having a rose, spray wave, or jet outlet) removed some distance from the side of the basin, so as to avoid the need for contact with this source of contamination: by means of this appliance the washing of the hands and face would be done by the continuous use of pure, uncontaminated water. In his letter he describes at length the ideal type of fitting and explains its advantages; he gives a list of infections likely to be disseminated by the present common type of basin, and indicates the dangers arising from their use by "carriers," finally emphasizing the importance of supplies of uncontaminated running water in maternity work. Dr. Grant urges the need for a publicity campaign to advocate the use of fittings of the new type, and suggests that a conference be summoned by the Minister of Health to consider the questions raised, and to arrange for further research in connexion with present-day sanitary appliances.

TREATMENT OF EMPYEMA.

DR. STUART TIDEY (London, W.) writes: The treatment of empyema has always been a source of anxiety to the surgeon, owing to the persistence of the suppurating cavity after the pus has been first evacuated. This is due in part to the rigidity of the thoracic wall not allowing the outer wall of the abscess cavity to fall in, and in part to the absence at the seat of lesion of the physiological pull which would normally keep the lung in contact with the chest wall. To overcome the obstruction to falling in of the chest wall it is the practice to resect portions of one or more ribs, a measure which is frequently successful. Pending rib resection, however, and in the event of resection being contraindicated by the condition of the patient, there is a simple measure which I have often found to be attended with gratifying results, namely: the constriction of the lower part of the chest wall by a bandage or binder passing directly over the lesion. The bandage may be kept from contact with the operation wound by means of a suitably adapted "surgical bridge," such as I described in the *Medical Press and Circular*, September 21st, 1927. The constriction compresses the lower thorax and its contents, thereby relaxing tension on the abscess cavity and allowing it to close. It must not be employed, however, till a free opening has been made for the escape of pus.

TREATMENT OF ASTHMA.

DR. W. J. MIDELTON (Bournemouth), referring to Dr. S. Gilbert Scott's article on the treatment of asthma by radiation (January 5th, p. 9), wishes to call attention to the value of such measures as the cautery, blisters, and irritants which promote the formation of pustules. He ascribes the benefit that follows in some cases to stimulation of the vagus or to local breaches in the skin, providing an outlet for toxins or leucocytes carrying micro-organisms.

MIXED HISTORY.

THE confusion in the lay press between the General Medical Council and the British Medical Association is interminable, so that it is perhaps no wonder that men of light and leading in other professions stumble at the same little stile. Not long ago a distinguished Cambridge professor referred in a public address to the "British Medical Council," but a new version (writes a correspondent) was forthcoming the other evening from a member of the council of the Royal Institute of British Architects, who was expounding to a general meeting a scheme of reform for that body. Drawing a parallel from the medical profession, he said that when doctors became registered "the two Royal Colleges were entirely swamped as an executive for voicing the views of the profession by the General Medical Council of the British Medical Association."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 48, 49, 52, 53, and 54 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 50 and 51.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 27.

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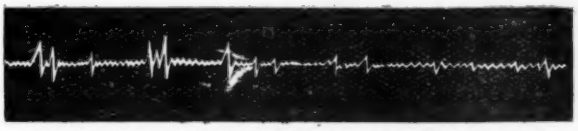

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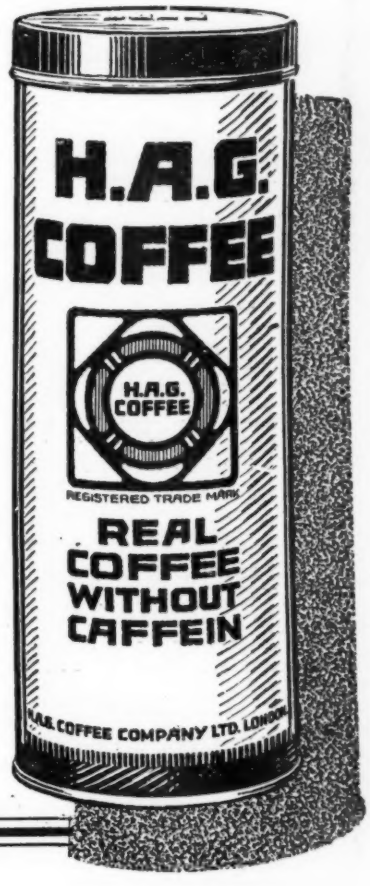

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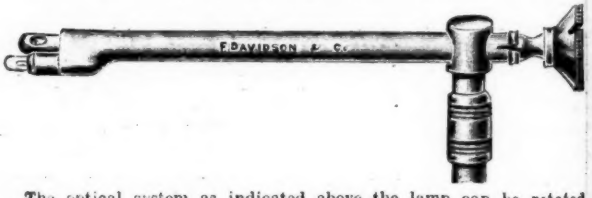

The optical system as indicated above the lamp can be rotated as in a cystoscope so as to bring into view the *pharyngeal nares*, the *larynx*, *epiglottis*, the *vocal chords*, and the *Eustachian tubes*. A suitable catheter in position is easily observed.

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